

Indian Health Service's Role in Building Environmentally Resilient Tribal Communities

2010 - 2011

Environmental Public Health Leadership Institute Fellow:

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EXECUTIVE SUMMARY:

The Indian Health Service (IHS) is a federal agency within the Department of Health and Human Services. Within the Indian Health Service is the Division of Environmental Health Services (DEHS) which has its headquarters in Rockville, Maryland. The DEHS program is comprised of 12, decentralized regional offices that are responsible for managing their own Environmental Health programs. Since 1955 the IHS DEHS has focused on providing environmental health services to American Indian and Alaska Natives (AI/AN) in three broad categories: general environmental health; community injury prevention; and institutional environmental health. These topic areas were developed in reaction to the needs of community members on reservations around the country with the goal to raise the health status of the AI/AN population. Since then DEHS program development has been focused on maintaining traditional sanitation practices instead of approaching environmental health from a more holistic, systems thinking vantage point. Due to this approach of maintaining status quo, the program has not kept pace with the number and severity of environmental public health risks that are increasingly common due to factors such as: increased household chemical usage; resource depletion; changing weather patterns; and unhealthy diets. All of which contribute to unsustainable lifestyles and communities. This lack of awareness and systemic thinking approach to include environmental sustainability issues in the role of DEHS is leading to an ever-increasing gap between the actual environmental risks and the traditional environmental health services we offer.

The DEHS approach to environmental public health must be broadened to incorporate emerging threats to public health via environment degradation, resource depletion, and climate change. We must raise awareness of the scope and urgency of the problem we are facing as a society and, bring hope through well thought out plans of action that will help in transitioning tribal communities into a post-peak oil era.

This project aims at creating a paradigm shift: broadening the scope of environmental health as practiced by Environmental Health Specialists in the Bemidji Area Indian Health Service. This is possible by utilizing the systems thinking approach to identify possible leverage points, and developing a strategic plans to move our department towards approaching environmental public health from a more systemic and holistic point of view.

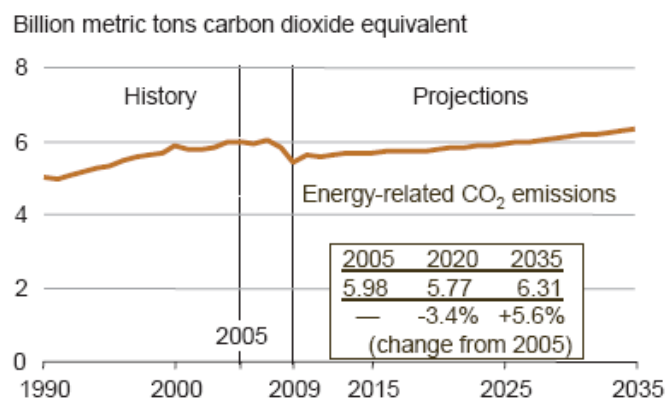
INTRODUCTION/BACKGROUND:

Most of us do not fully comprehend the depths at which our society depends on fossil fuels for everything we consume. Even many of the public health advances in the twentieth century, such as increased sanitation, were the result of fossil fuel use. Coal fired power plants produced electricity that allowed us to build comprehensive water treatment and distribution systems, effective sewage treatment systems, and reduced illnesses related to poorly controlled temperatures for raw food products and eliminated the role that contaminated refrigeration ice played in spreading disease. Vaccines as well, could not be researched, developed, and produced without electricity, much of it still produced from coal. (Osterholm) "With the simultaneous occurrence of the exploding 21st-century human population and a rapidly growing part of the world evolving from low energy-consumption, developing countries into high energy-

consumption, developed countries, carbon-based energy use will only accelerate for the next decade.” (Osterholm) “The peak of oil discovery was passed in the 1960s, and the world starting using more than was found in new fields in 1981....Many countries, including some important producers, have already passed their peak, suggesting that the world peak of production is now imminent.” (ASPO) From here on out the rest of the oil extracted will be much more energy-intensive to extract and refine, yielding much lower net amounts of energy and much higher prices. As these fossil fuel resources become increasingly harder obtain we will also experience greater environmental degradation. Current examples would be the tar sand extraction endeavors in Alberta, Canada and shale extraction of natural gas across the United States. An article on the Solutions webpage cites, “studies around the world make it clear that the more people care about money, wealth, and possessions, the less they value protecting the environment and the less concerned they are about how environmental damage affects other humans, future generations, and non-human life.” (Solutions) Consumption has become a way of life in America. “In a society that relies on fossil fuels for transportation, food, warmth, and light, the loss of an abundant and inexpensive form of high-quality energy is no small thing.” (van Gelder)

A discussion about peak resources must also address the result of human processes taking massive amounts of carbon out of the ground and putting it into the atmosphere--climate change. Climate change is the result of greenhouse gasses, such as carbon dioxide and methane, trapping more and more heat in the Earth’s atmosphere. No longer is there a scientific argument if global warming is happening, it is. This can be witnessed by the alarming rate at which polar ice caps and glaciers are melting, as well as the increase in severe weather events. “The more direct health effects of climate change can include injuries and illness from severe weather, floods, and heat exposure; increases in disease caused by allergies, respiratory problems, and illnesses carried by insects or in water; and threats to safety and availability of our food and water supplies. (CDC Climate Change) Environmental Public Health professionals must be present for conversations on how to deal with this global issue. Below is a graph from the United States Energy Information Administration: Annual Energy Outlook 2011. It shows a slight decline in carbon dioxide emissions from energy sources around 2007-2009, reportedly due to the economic downturn. But it projects a gradual increase to 6,315 million metric tons by 2035. (EIA)

Figure 3. In the AEO2011 Reference case, energy-related carbon dioxide emissions grow to almost 6 percent over 2005 levels by 2035



[http://www.eia.gov/forecasts/aeo/pdf/0383er\(2011\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383er(2011).pdf)

As Environmental Public Health professionals, we can play a key role in redirecting the unsustainable practices of our society. Environmental Public Health professionals are perfectly situated in our communities to provide education and advocate for more resilient communities. Moving “from oil dependency to local resilience” is the basis for a movement called “Transition Towns.” (Hopkins) The Transition Town Handbook defines resiliency as, “the ability of a system, from individual people to whole economies, to hold together and maintain their ability to function in the face of change and shocks from the outside.” (Hopkins) Transition Towns employ a concept entitled “Permaculture,” a holistic framework, to aid in moving communities to a more resilient future. “Permaculture is a creative and artful way of living, where people and nature are all preserved and enhanced by: thoughtful planning, the careful use of resources, and the respectful approach to life.” (Wilson) “Permaculture design seeks to: provide for our current needs; bring decency and dignity to all people; assure abundance for future generations; repair the damage to our planet; and reverse/retard global warming.” (Hopkins)

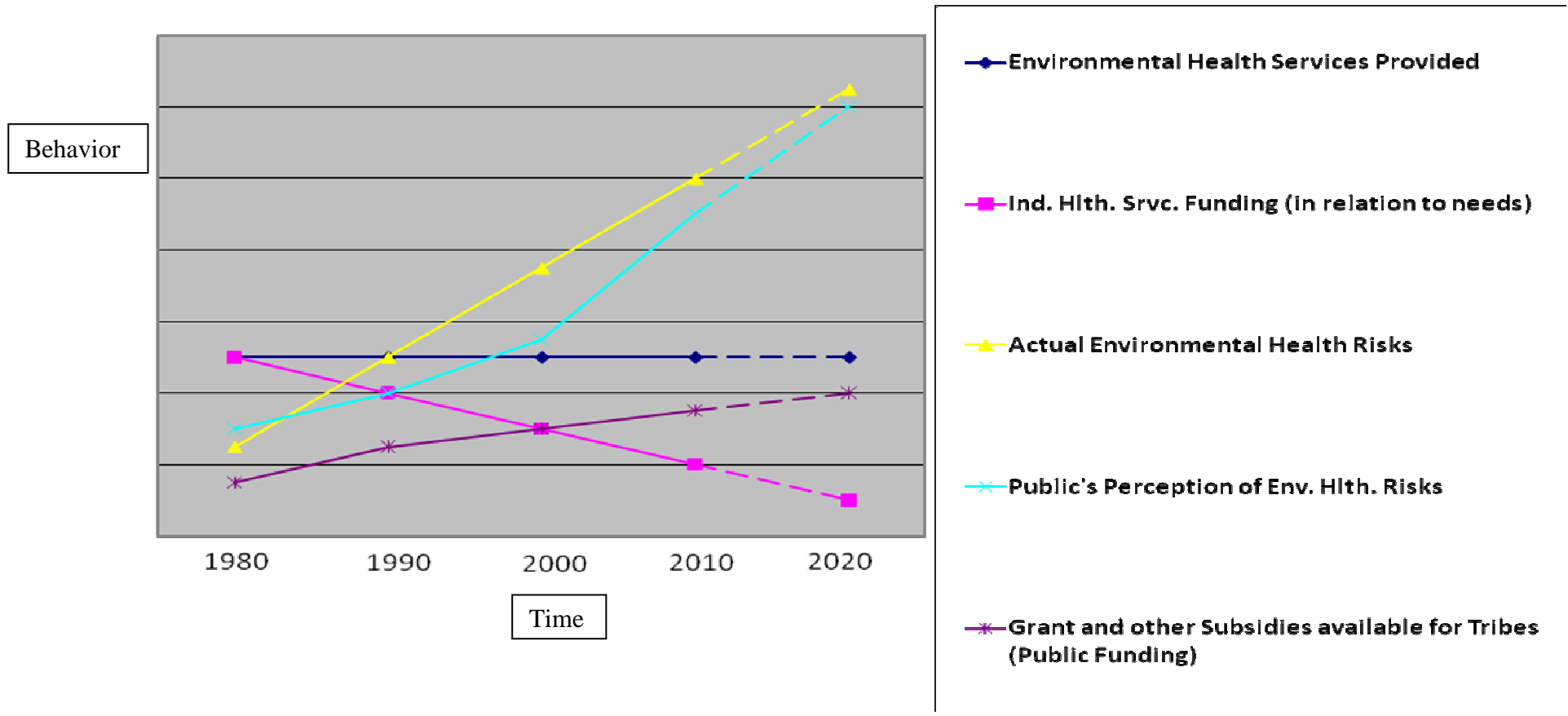
The National Environmental Health Association (NEHA) suggests Environmental Health professionals get involved by, “Advocat[ing] for sustainability activities.” (NEHA) This can include “solid waste stream diversion and recycling,” the emphasis of this leadership project. (NEHA) We as Environmental Public Health professionals must advocate and provide education to those we serve on how to best prepare themselves and their families during a post-peak oil era that includes climate change. We must also advocate for program changes that will allow a much broader, systems thinking approach to our profession.

Problem Statement:

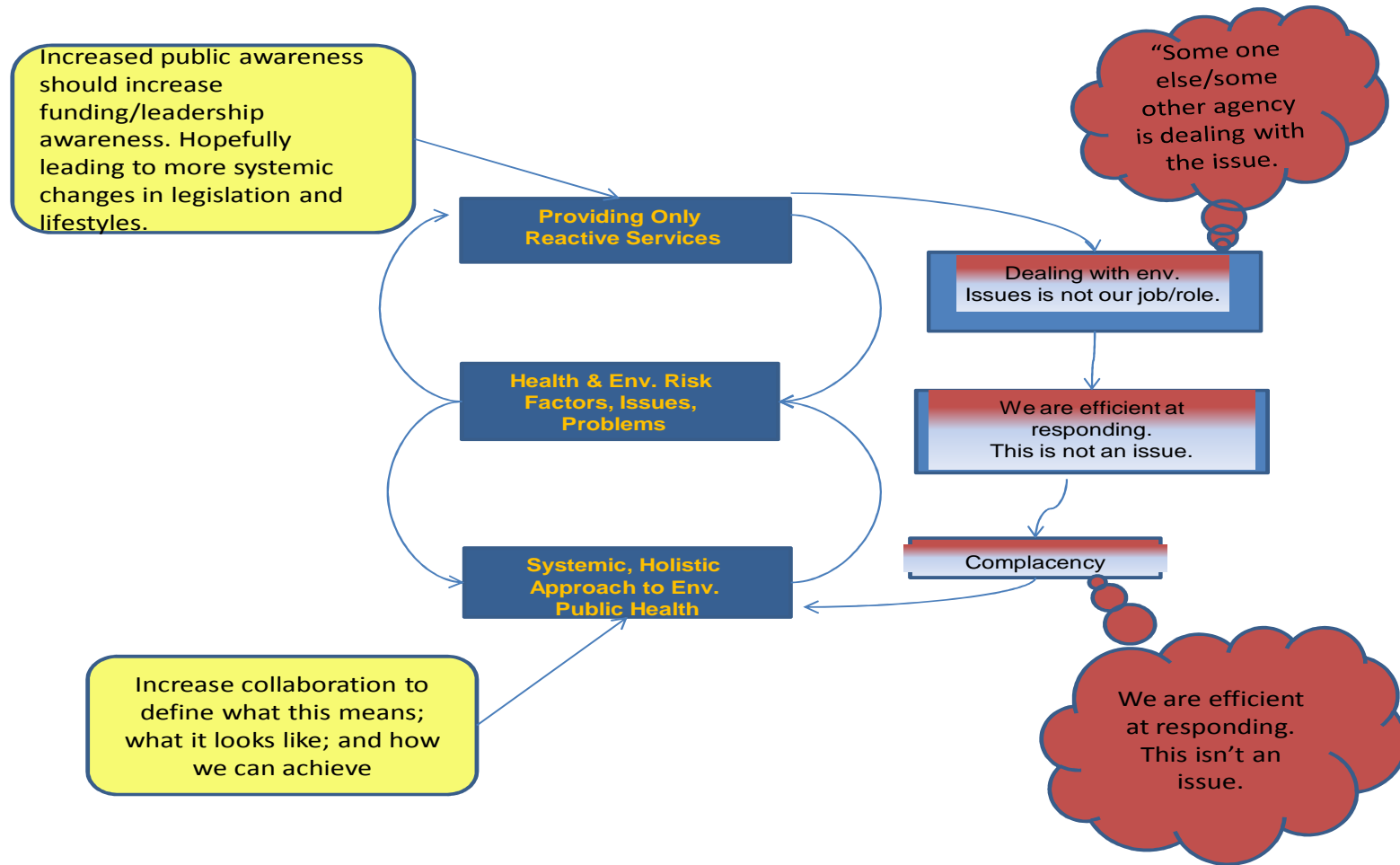
Prior to the 1970’s the scope of Environmental Health, as practiced by the Indian Health Service, was much different from where it is today. During the 1970’s the United States Environmental Protection Agency was created and the scope of Environmental Health was fragmented into two pieces, environmental quality and Environmental Health. The Environmental Health programs typically continued to provide “traditional” Environmental Health functions related to our roots in the practice of sanitation science such as: retail food and dairy inspection, removal of solid waste, vector control, etc. For this reason the Indian Health Service Division of Environmental Health Services has largely viewed environmental issues as something outside their direct mandate to address. This notion is further exasperated by the fact that the IHS DEHS’s funding is based on facilities in communities, not a systemic view of Environmental Health or the current reality of Environmental Health risk factors beyond the facility mentality. This lack of awareness and systemic change to include environmental sustainability issues in the role of DEHS is leading to an ever-increasing gap between the risks to those we serve and the services we offer.

The DEHS approach to environmental public health must be broadened to incorporate emerging threats to public health via environment degradation, resource depletion, and climate change. We must raise awareness of the scope and urgency of the problem we are facing as a society and, bring hope through well thought out plans of action that will help in transitioning our programs and tribal communities into a post-peak oil era.

Behavior Over Time Graph:



Causal Loop Diagrams and applicable Archetypes:



10 Essential Environmental Health Services:

Describe how your project seeks to enhance or fulfill one or more of the 10 Essential Environmental Health Services and/or the three (3) functions described in the IOM report: assessment, policy development and assurance.

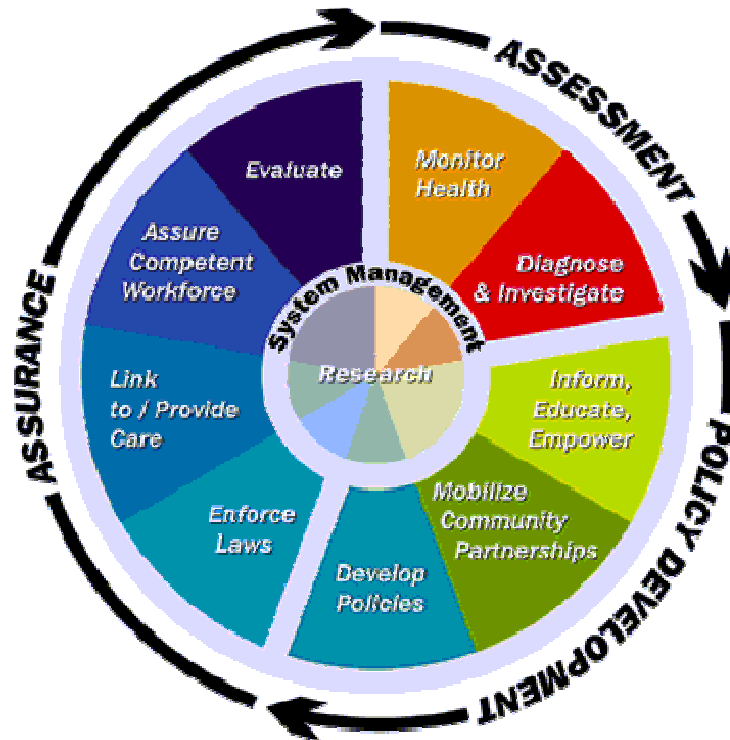


Figure 1: This picture is reprinted from The Public Health Functions Project.

This project plan works to meet the following essential environmental health services:

ESS #1: Monitor environmental health status to identify and solve community environmental health problems.

Network with the Tribes to identify what environmental health challenges communities and reservations face; as well as identify key players that will champion environmental sustainability initiatives. Develop assessment tool to collect baseline and follow up data related to community resiliency.

ESS #2: Diagnose and investigate environmental health problems and health hazards in the community.

Utilize the assessment tool to analyze aspects of community infrastructure that can have an impact on Environmental Health issues.

ESS #3: Inform, educate, and empower people about environmental health issues.

Advocacy for a broader, risk based view of Environmental Health. Build IHS staff capacity to provide education while utilizing the assessment tool. Many issues listed on there would not readily be identified as environmental health issues. Reach out and network with as many people as possible. Build strong coalitions and provide the necessary tools to empower these coalitions to demand change.

ESS #4: Mobilize community partnerships to identify and solve environmental health problems.

Provide advocacy and resources for community partnerships and coalitions to take action. This could be in the form of educational trainings or funding for systemic projects.

ESS #5: Develop policies and plans that support individual and community environmental health efforts.

Advocate for the Tribes to develop and adopt policies that address issues on a holistic level and bring about systemic change.

ESS #7: Link people to needed environmental health services and assure the provision of environmental health services when otherwise unavailable.

Facilitate the connection between interested parties with subject matter experts, funding sources, other tribes working on the same projects, etc.

ESS #8: Assure a competent environmental health workforce.

Provide trainings, workshops, and seminars to build capacity on both the Tribal and Indian Health Service sides. Provide cross training with those with more experience.

ESS #9: Evaluate the effectiveness, accessibility and quality of personal and population based environmental health services.

Set measurable, obtainable goals. These need to be monitored throughout the environmental health project that is conducted at each site. At the end evaluate and highlight successes.

EES #10: Research new insights and innovative solutions to environmental health problems and issues.

Through networking and developing this assessment tool and accomplishing subsequent environmental sustainability projects that have stemmed from the assessment tool and building countless partnerships and collaborations, we are positioning ourselves to develop innovative ways to solve environmental health problems and issues.

National Goals Supported

This project seeks to support the goal of the CDC Health Protection Goal which strives to ensure community preparedness. Advocating and educating our communities on ways they can become more resilient during times of hardship is an excellent way to increase preparedness. For example, advocating for communities to build local food networks or energy networks will ensure people have several options of where to get food and/or energy during hardships.

The ambitions of this project support several of the National Strategy to Revitalize Environmental Public Health Services (NSREPHS) goals. First, this project strives to build local capacity to address environmental sustainability initiatives. Since this is also a development initiative for our Indian Health Service Department of Environmental Health Services we are also equipping our staff with the necessary skills to advocate and educate communities. All of which satisfy Goal V. Lastly, a main goal of this project is building strategic partnerships with tribal entities that include land use planners, economic development personnel, tribal leaders, policy makers, and any interested parties to address the different aspects of our unsustainable lifestyles. This last goal supports Goal VI set forth by NSREPHS.

Successful implementation of this project will result in supporting several of the competencies identified by the American Public Health Association's "Environmental Health Competency Project: Recommendation for Core Competencies for Local Environmental Health Practitioners." In providing a community assessment tool for our tribal communities we will be supporting the entire "Assessment" section of competencies including: research; data analysis and interpretation; and evaluation. Through the identification of potential environmental sustainability initiatives we will be supporting several of the competencies listed under the "Management" section including; problem solving; economic and political issues; organizational knowledge and behavior; record keeping; and most important-partnering. Many of the competencies listed under the "Communication" section will also be supported including: education; communication to all levels of in communities; and marketing environmental public health as a service.

Resources/Inputs

Funding:

- IHS Funding
- Tribal Funding
- Potential Grants

Partners:

- IHS Staff
- Tribal Staff
- HRDC (planning)
- Green Teams
- Individual Tribal Members

Potential Partners:

- NCEH
- EPA

Other Resources:

- MN GreenSteps
- MN Subject Matter Experts
- EPA
- CDC
- NEHA

Activities

Build Partnerships/Capacity

- Make connections with interested Tribal parties
- Join any available Green Teams/groups with sustainability emphasis
- Form a multidisciplinary group that represents the breadth of tribal departments and interested parties
- Develop Staff's capacity to gain knowledge and skills to view Env. Health on systemic/holistic level.

Model Practices

- Bring attention locally to the impact of the environment on public health.
- Advocate for sustainable policies. Land use planning and zoning, transportation, energy efficiency, green business development, and environmental management.
- Facilitate bringing in resources for the Tribe.

Program Development:

- Build Staff Capacity Link EH and Tribal Staff to best practices.
- Facilitate connections between Tribe and subject matter experts.
- Pilot Assessment Tool package.
- Develop SOP for assessment tool package.
- Identify subject matter experts in other states.

Outputs

- Number of networking meetings.
- Number of "Green Teams" or groups with sustainable emphasis.
- Number of Agencies involved.
- Greater understanding of the relationship between the environmental health and public health.

- Increased public awareness and understanding of sustainable initiatives.
- Number of new/updated policies including sustainable provisions.
- Number of adopted codes that help address sustainability.

- Functioning Assessment tool.
- Number of subject matter experts identified in the different states where tool will be used.
- Number of times the assessment tool package has been successfully implemented.
- Number of action plans.
- Number of Successes.

Short & Long Term Outcomes/Impacts

- Resilient Tribal Communities.
- Tribal level policies that encourage resilient communities.
- Functioning, sustainable programs that continue to be funded or fund themselves.
- Environments that encourage members to live healthy, sustainable lifestyles.
- Increase in skills and networks to ensure resources are shared.
- Expanded definition of Environmental Health amongst practitioners.
- Increased staff confidence in regards to environmentally resilient topics.
- Less reliance on fossil fuels.
- Less air pollution.
- Decrease in chronic disease such as diabetes, and asthma.
- Cost savings on energy and other resources.

The health and quality of life for Tribal Reservations will be enhanced to the highest level possible.

PROJECT OBJECTIVES/DESCRIPTION/DELIVERABLES:

Program Goal

To broaden the definition and practice of environmental health in order to foster the connection between environmental conditions and the local public health status.

Health Problem

Continuation of lifestyles and practices which detrimentally effect the environment and will eventually lead to an environment that can no longer support civilization.

Outcome Objective

By November 2015 the number of IHS Environmental Health Specialists advocating to tribes throughout the area for the adoption of lifestyle and policy changes that include a greater number of proven, effective, sustainable strategies will be greater than the June 2010 level.

Determinant

- Dependence on non-renewable energy sources
- Higher rate of personal vehicle usage over biking, walking or public transit.
- Lack of accessibility to public transit.
- Lack of zoning regulations and comprehensive community planning.
- Lack of sustainable solid waste management initiatives
- Lack of coordinated environmental management.
- Lack of cultural framework that supports environmental sustainability rather than capitalistic exploitation of the environment.

Impact Objective

By January 2011, a compilation of proven, effective, sustainable strategies will be available for use by Bemidji Area IHS Environmental Health Specialists to advocate for the adoption of more sustainable practices in tribal communities. This tool can be used by IHS Environmental Health Specialists to help provide motivation and direction to those who are looking for next steps.

At the end of my EPHLI Fellowship it is expected that at least one of the strategies will have been adopted into the culture of the Leech Lake Band of Ojibwe through the Green Team activities.

Contributing Factors

- Lack of expertise in sustainability initiatives.
- Lack of awareness of the issues.
- Unwillingness to change
- Unwillingness to take on new threats to public health outside those that are already regulated
- Archaic definition of environmental health
- Historical Precedence
- Lack of technical, financial, and human resources
- Lack of model programs to provide direction
- Lack of resources to incorporate proven strategies.
- Lack of capacity to fully adopt all of the proven strategies.
- Lack of Headquarter support and vision.

METHODOLOGY:

Process Objectives/Events and Activities

Process Objectives:

1. By March 2010 become an active member on one tribal group with an emphasis on sustainability.

Event: Attend all Leech Lake Band of Ojibwe Green Team Meetings.

Activities:

- Provide an overview of the GreenSteps MN program to the Green Team lead and all members.
- Provide overview of the assessment tool provided that has been tailored from a cities approach to a tribal reservation approach.

2. By December 31st, 2010 develop, implement, and evaluate the sustainability assessment tool package with one tribe.

Event: Implementation of assessment tool package.

Activities:

- Pilot the assessment tool to identify areas of interest that the group would like to tackle over the next year and beyond.
- Have group prioritize areas of interest.
- Assess areas of interest to acquire baseline data.
- Develop action plan.
- Implement action plan.
- After 6 months evaluate the action plan and revise as necessary.
- Highlight successes.
- Continue with action plan if desired.

3. By January 2011 present project to our newly developed Peer Discussion Group in the Bemidji Area Indian Health Service.

Event: Conduct a conference call with all of the field staff in the Bemidji Area IHS.

Activities:

- Provide overview of project concept to group members.
- Share implementation strategies and experience with obstacles, tactics to overcome any obstacles.
- Solicit members for information on how to modify the program package to allow for use in other areas.
- Solicit members for information on how to improve the assessment tool.

4. By June 2011 begin to work with other Environmental Health Specialist in the Area to pilot this program with other tribes.

Event: Facilitate activities.

Activities:

- Assist with developing subject matter expert database in MI and WI.
- Assist with contacting tribes to advocate for sustainable initiatives.
- Assist with building tribal teams with the emphasis of sustainability.
- Assist with building capacity of existing teams.
- Assist with piloting assessment, area of interest assessments, development of action plan, and evaluation.
- Provide mentorship to staff who are interested in bringing this project to their Service Unit.
- Provide database of what tribes are doing in different aspects of environmental sustainability

RESULTS:

The Bemidji Area Indian Health Service Office's main goal was to have a completed assessment tool package that could be presented to a Tribe to help identify and prioritize potential initiatives. I began my project by updating the Minnesota GreenSteps assessment tool to be more appropriate for a Tribal entity. From there I worked to partner with a local Tribal Green Team with the Leech Lake Band of Ojibwe. I met with the Team Lead and we went through the assessment tool and color coded each action item into one of four categories: Already Being Done; Feasible; We'd Like To Do If We Had More Staff; Not Even On Our 5 Year Radar.

At the next Green Team Meeting we presented the color-coded assessment tool to the Team and asked for suggestions about what we could accomplish during the next year. Due to schedules and trying to hire a Sustainability Coordinator, this project was put on hold until September. At the Green Team meeting in September the Team chose "composting" off of the assessment tool as a project they wanted to tackle in the upcoming year. The purpose of this project is to implement a reservation-wide composting pilot project that will provide education, primary data on the amount of waste diverted from the solid waste stream, and compost for use in 74 community and backyard gardens. It is expected that this project will result in a reservation-wide composting policy that expands the use of composting, recycling, reusing, and reducing waste that will in-turn reduce landfill and transportation air emissions thereby contributing to an all-around healthier community. After presenting this project concept to the Bemidji Area Indian Health Service Director of Environmental Services we received funding from the Indian Health Service of up to \$10,000. The criteria included forming a coalition, policy/systems change, and the project must be able to sustain itself after the original funding is spent.

So far the Team has been able to successfully partner with four major waste producing facilities on the Leech Lake Reservation: The Leech Lake Band of Ojibwe (LLBO) Northern Lights Convention Center Casino & Hotel; Palace Casino & Restaurant; LLBO Tribal College; and the Bugonaygeshig School. Through my research for model composting policies I located information regarding grant opportunities through the Minnesota Pollution Control Agency. Despite the short time frame before it was due, the Team was able to apply for the grant funding and was awarded \$16,000. It is estimated that after one year of composting these four facilities will offset greenhouse gas emissions by 61MTCE.

Next we plan to provide a marketing campaign that includes education on composting. Composting will commence spring 2011. Use the compost on the 74 gardens around the reservation to help grow healthy produce that will promote healthier lifestyles, environmental sustainability, and more resilient communities across the reservation.

In addition to the assessment tool, the tool kit will also include information on data collection, evaluation tool, and a way to highlight successes. With the Leech Lake Green Team project we have successfully implemented the assessment tool and our next phase will be data collection. For this we intend on evaluating the tipping fees before and after each facility begins composting. Since the tipping fees are based on the weight of the waste being hauled away, we will be able to estimate how many pounds of waste were diverted out of the solid waste stream and into the compost bin. From this we will be able to calculate the reduction of greenhouse gases from landfill emissions. We also plan on measuring the amount of compost generated. The baseline data is zero since none of the facilities currently compost any material. We would also like to include a celebration for our successes. Therefore this project will culminate with a feast for the Leech Lake Reservation Tribal Council with foods produced in these gardens using the compost generated at the four facilities.

Expected Outcomes:

Through education and advocating in terms of environmental resiliency the Tribal communities that we serve will become more resilient to the effects of climate change and peak resources. The intent is healthy behaviors will be fostered through initiatives such as locally sustainable food production and communities designed to encourage alternative transportation such as walking and biking. The sense of community will be resuscitated by re-localizing communities including increase community infrastructure, sustainable urban planning, and development of local economies. As the definition of Permaculture states, "...design a system whereby we find ways of living to allow for permanent cultures to exist. Where all humans can live abundantly well while leaving the planet in better condition than whence we found it." (Wilson)

LEADERSHIP DEVELOPMENT OPPORTUNITIES:

Megan Arndt

My EPHLI experience has proven to be challenging and immensely rewarding. The opportunities to meet, interact, and learn with so many dedicated professionals has provided a world class education on the history and future of the Environmental Public Health field. Through the multiple self-assessments I have gained useful knowledge about myself and how others view me on a professional level. The systems thinking approach utilized during EPHLI has allowed me to analyze issues much more thoroughly. It has proven to be extremely helpful in identifying root causes of issues instead of merely dealing with the obvious and getting stuck in a potentially vicious cycle of "fire fighting."

ABOUT THE EPHLI FELLOW

Megan Arndt is a Lieutenant Junior Grade in the United States Public Health Service assigned to the Indian Health Service in Bemidji, Minnesota. Megan has served in her current position as an Environmental Health Officer in the Minnesota District Office of the Indian Health Service since February, 2010. As a Service Unit Environmental Health Office she is responsible for implementing comprehensive environmental health programs to over 9,000 American Indian residents of three Minnesota tribes. Program areas include environmental sustainability; food protection and sanitation; institutional environmental health; occupational health and safety management; injury prevention; vector/epidemiology investigations; solid, liquid, and hazardous wastes; and environmental health ordinance and code development. In this position she also provides consultative, technical, and training assistance in environmental health and safety management to the tribes. From March 2008-January 2010 she served as a Service Unit Environmental Health Office for three different tribes located in Minnesota with a population of approximately 6,000 American Indian members. For her exemplary performance of duty she was awarded the United States Public Health Service's Achievement Medal and Citation.

During her time with the Indian Health Service, she has obtained multiple credentials such as: Certified Aquatic Facility Operator, Certified Playground Safety Inspector, and Registered ServSafe Instructor and Proctor. She also obtained her Registered Environmental Health Specialist credential in May 2009.

Megan received her BS in Environmental and Public Health from the University of Wisconsin-Eau Claire (Cum Laude) in December 2007. While there she served as the president of UWEC's Student National Environmental Health Association. In this role she organized many community service events. In May 2008, she was chosen for an Outstanding Student Award from the UW-Eau Claire Alumni Association.

Currently, she is a member of the National Environmental Health Association and serves as a member of the Northern Plains Commissioned Officer Awards Committee. She also Chairs the Bemidji Area Indian Health Service Peer Discussion Forum and is a member of one tribal green team and one healthcare green team.

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