

## IHS SUSTAINABILITY WEBINAR 1 - COMPOSTING & FOOD DESERTS

Recorded: NOVEMBER 13, 2012

This is going to be the first in a series of sustainability webinars being presented by various staff members across IHS and the first one today is called Nutrition and Foods Deserts.

It's going to be presented by Megan Arndt and I'm going to let Megan do her own introductions when she gets on.

Basically, the purpose of the series is to begin a forum to discuss and gain more insight into different sorts of sustainable innovations and also encourage sharing of sharing of best practices that are out in the field in IHS and outside of IHS.

The learning objectives for the series are going to be to give you some ideas about how to achieve sustainability through best practices, provide an understanding of sustainability in regard to your work, how to implement those practices, how to get community collaboration and involvement and provide you examples of initiatives that have proven to have merit and and that have been successful.

I'll put my slides up.

My name is Megan Arndt, and I'm a Field Environmental Officer with the Minnesota District Office here in Bemidji, Minnesota.

And for the past few years we've been working to incorporate environmental sustainability into a more holistic practice of environmental public health.

I want to start out with this slide because it represents the big picture behind our motivations to incorporate environmental sustainability.

Here you can see that line representing the world bio-capacity at one planet.

If we average all the world's citizens' lifestyles into one, we would need one and a half planets to support them.

But if everyone lived like the average person in the United States we would need five planets just to support everyone.

As we all know that is not sustainable.

Recently, my Area Director and I sent out a questionnaire to all the environmental health staff within the Indian Health Service as well as Tribal Programs.

From those who responded, over 70% believe that peak resources will impact their programs ability to provide services to their tribal communities.

On this slide you can see that over 70% of those respondents believe that climate change is affecting their tribal communities now or will within the next five years.

Along the left hand side. I have a

few of the potential impacts from climate change on public health.

Respondents indicated that four out of the eight resources

on this list would moderately or significantly improve their ability to incorporate environmental sustainability into their program with clarification of the role of Environmental Health Specialist in environmental sustainability at the top of this list. This indicates a clear mandate coupled with outlining this issue might go a long way in reducing the barriers on this list. Here in the Bemidji Area we've been striving to incorporate environmental sustainability into a more holistic approach. By doing so we've developed these following visions. Most importantly we're incorporating a systems approach into addressing environmental public health threats because the problems we are facing today don't lend themselves to simple reductionist solutions, and we see environmental sustainability as something we are weaving into the fabric of our program. This is definitely not a new silo for our program.

We have peak resources and climate change and we wondered what public health affect these were having on reservations within our area and what vulnerabilities exist. We found a study done by Honor the Earth, a group from the White Earth Reservation, found that roughly 50% of the entire tribal economy on the White Earth Reservation is being spent outside the reservation on food and energy. So, it's 50% of the entire economy going outside of the reservation.

We also learned that 90% of our food we eat in this State is imported, which is really scary because this state is a huge farm state and all this creates a large dependence on the fossil fuel-based transportation system, which we all know is getting more expensive with every year.

This is more of a closer picture on Minnesota's energy vulnerabilities. Nearly 90% of our energy consumption is fossil fuel and uranium based, however Minnesota doesn't have any of these resources of our own. This creates a huge hemorrhage of over \$20 billion dollars spent in neighboring states and countries.

We've also had to contend with one of the worst droughts in modern history. The top picture depicts the drought in the beginning of this year and on the bottom picture you can see how the drought has increased greatly. This has been linked to agricultural failures throughout the Midwest and with rivers such as the Mississippi at record lows it's also affecting transportation routes. Here in Minnesota we've been in the drought for much of 2012.

Here are some of the ways the food system impacts Public Health. American Indians and Alaska Native adults are at a 2.3 times higher likelihood of being diagnosed with diabetes compared to non-Hispanic whites. The youth are also at a disadvantage with 110% increase in diagnosed diabetes from 1990-2009.

A quote from Winona LaDuke's book, Food is Medicine, "It is widely recognized that the replacement of indigenous foods with a diet composed primarily of modern refined foods is the centerpiece for the (diabetes) problem".

With the knowledge of all of these challenges, our goal is to build tribal resiliency, building systems that have the ability

to flex and adapt due to the negative stresses from the outside including peak resources and climate change and economic constraints. A few years back, I was lucky enough to be accepted into the Environmental Public Health Leadership Institute and through this year long program, I was able to revise an assessment tool from the Minnesota Pollution Control Agency into a tool that can be used on any Tribe throughout the country. It focuses on 28 best practices and 5 key areas and having 168 unique action items, this tool is very broad and it provides a great baseline data on current environmental sustainability activities throughout the reservation. And now that I had this assessment tool, I needed to pilot it somewhere. We found out that a nearby reservation had a functioning green team who was classified as an advisory board to the council. This multi-disciplinary team had the goal of increasing tribal sustainability efforts. As we were going through the assessment tool, localizing the reservation food system became our first goal in becoming more resilient. Our first stepping stone in this process was composting. So, what is composting? It's the natural process of decay to turn organic material, such as grass clippings, leaves, food and kitchen scraps, things like that, into a valuable humus-like product called compost and it completes the cycle of eating, then you compost your waste, you grow more food and you eat again. Composting is really nothing more than speeding up the natural decay process. A pile of wheat is used to help us manage the factors that affect the rate of decay. Those factors being, air, water, food and temperature, and by managing these factors you can speed up the process. Turning or mixing the piles brings in fresh air and oxygen into the piles and it makes it easier if you have two bins, like the gentleman on the left here, where you can turn from the full bin into the empty bin. Tools can also help you move and turn your compost. On the right are some handheld tools, but in the middle, most of our sites are using bobcats to turn their piles due to the size of them. Remember, composting doesn't have to be a lot of work for you. Most of the composting work is being done by your workforce, which is all those little critters in the pile. By putting in more effort you can speed up the rate of decay but you can get really great compost even with very little effort, it just takes a little bit longer. The most rapid composting happens when you start with mixed grounds and greens and regularly turn the pile and control the water content. Here you can see an example of a three-bin system, where you can start on the left bin and you can turn it into the middle bin for active composting and then turn it into the bin on the right for final curing process. This is probably the easiest way to control all those things. Some organic wastes are better left outside of your compost pile because they can cause problems either during the composting process or when you go to use the compost. Some of these forbidden materials include meat, fish and dairy products because of their tendency

to attract pests and vermin, which none of us want, as well as hard to kill weeds, such as quack grass and weeds that have already gone to seed.

A hot enough pile can kill these weeds and these weed seeds, however the piles that we find in our backyards won't get to a high enough temperature for long enough to kill them so you want to just not put those into your compost pile.

And sometimes it just doesn't go how you want it to.

If some problems arise, such as rotten odor,

the biggest issue with that is poor aeration;

turning your pile some more, adding some browns,

that will fix that issue, as well as an ammonia odor,

which means you have too many greens or too much nitrogen in your pile and that extra nitrogen

is being converted into ammonia.

The solution is to balance the carbon to nitrogen ratio

by adding more browns and mixing the pile.

So really anything that goes wrong, the best

solution is adding more browns such as leaves,

anything with carbon in it, dead leaves of course,

some cardboard or paper, things like that,

and turning the pile will fix most issues with composting.

Why should we compost?

The obvious it to save on tipping fees,

lead by example and teach sustainability to our community,

but we also decrease the waste that ends up in landfills contributing to greenhouse gases.

We also decreased the need for artificial fertilizers and water usage, as compost

provides all the natural nutrients you need as well as it has a great ability

to hold onto water and allow it for the plants in the surrounding area.

As part of our initiative, we built partnerships initially

with four establishments, the Bug O Nay Ge Shig School,

LLBO Palace Casino, Leech Lake Tribal College, as well as the

Solid Waste Division, and most recently, as of two weeks ago.

we joined up with the Cass Lake-Bena School District.

Their middle school and high school will also be composting with us.

In order to jump start this initiative, we were able to secure funding

from both the Minnesota Pollution Control Agency as well as the Indian Health Service.

The MPC awarded us \$16,000.00 to go towards the construction

costs for the project, including all the materials to build the bins at each site.

The \$12,000.00 from the Indian Health Service has provided great

educational material for the kids in the schools as well as the community.

We did some community education classes as well as outreach.

You are probably wondering why I have a bunch of pictures

of garbage trucks on the screen here.

The annual estimated solid waste that we're going to be diverting into

compost instead of the solid waste stream is 153,000 pounds,

which doesn't include our newest partner, the Cass Lake-Bena school district,

but that 153,000 pounds is equivalent to 4 ¼ garbage trucks.

That much waste is going into compost instead of the landfills now. If you are thinking of creating a compost system at your site, these are some of the questions we brought up to our potential partners that they needed to answer.

What are your sources for compost, are they reliable and consistent?

What size of system makes sense for you, including the bin size, things like that, who will manage and staff the program, what funding do you have available to start the program and also to sustain the program and how will the finished compost be used.

Here are some pictures of the bins being built.

This is at the Bug O Nay Ge Shig School, where the kids were able to design and site the bin and build it themselves.

Here is a 7<sup>th</sup> grader working on it.

Here some more pictures of the school bins being built by the students.

Here it is, mostly completed, there is a third bin off to the right now, but John who is the lead at the school, has just taken this program and run with it further than we had ever imagined.

They had a complete composting awareness week in May, where they started composting in the kitchen, as well as used all compostable utensils in the kitchen, so the plates and the forks and everything like that went into the composting bin as well as the kids are responsible for maintaining it.

It's incorporated into their curriculum so their science classes are out there taking the pH and the temperature and the water content, things like that, as well as John has been able to develop a curriculum that's approved by the State in Math, English, Science and History all relating to composting and gardening and most recently they've just built those two greenhouses out on-site for the kids to start using the compost to grow food to be used in the kitchen and complete that circle.

Here's a picture of the kids, they built the actual bins that you'll see a picture coming up of.

They took the flat sheet metal, they bent it and welded it together, they did everything on designing it; everything has been incorporated into a lesson plan for these kids.

And here's the final product, the bins.

These are in the kitchen and they are also on wheels so they can be wheeled out to the compost pile and dumped in.

This is part of their awareness week, where the kids in the picture are separating their lunch waste into the compostable items and the non-compostable items.

This is a picture of the compost bin that was built at the tribal college.

This was just recently completed and at the start of this school year back in September is when they started composting.

Here's another picture.

They use the concrete on the bottom to aide in turning

the pile with the bobcat so they don't dig into the dirt.

This is the compost bin at the Palace Casino and here you can see they are incorporating a lot of their ground waste right now with the grasses but they'll also be incorporating their kitchen waste in there soon. Their bin is 10X40, again with a concrete pad for turning it with a bobcat.

Here is a sign that was developed by the

Solid Waste Division of the Leech Lake Band of Ojibwe,

and this sign will be installed at the main transfer station on the Leech Lake Reservation and it will be put up so the kids can look at this sign as the parents are unloading the garbage at the station and the goals of this is to raise awareness of the benefits of composting and how easily it can be done at home.

This is an example of the kitchen poster that was developed by the green team and printed off using funds from the Indian Health Service.

It's on a cardboard paper and then it's laminated

or somehow put in the part of the kitchen where it won't get dirty, but it gives a good idea of what can be composted and what not to.

This is also handed out at the educational session.

Here's a pamphlet, the front and the back side of a three-sided pamphlet about composting, also developed by the green team and printed off as community outreach.

The second of this initiative is the food deserts and by definition the CDC defines it as areas that lack access to affordable fruits, vegetables, whole grains, low-fat milk, and other foods that make up the full range of a healthy diet.

Some contributing factors include distance to grocery store or supermarket, transportation and economic constraints, all of which are very big concerns on reservations where the nearest grocery store might be

30 miles away and people don't have reliable access to transportation, as well as the price of food is becoming higher and higher.

This slide is from the USDA.

It highlights where they have identified food deserts throughout the country.

Here is a close-up of the Bemidji Area, so we have Michigan, Wisconsin and Minnesota and as you can see, much of Minnesota is covered in food deserts.

Interestingly enough, they are centered on the western half of the state, which is the main agricultural section of the state, so that is very interesting that the food deserts are located in the agricultural areas.

As well as.. if you can see my pointer, this is Bemidji and so we are surrounded by some very large food deserts.

This poses a great challenge to us in building a local infrastructure for the food systems and eliminating these food deserts.

So on to our next steps of the green team.

We want to map the food shed of the Leech Lake Reservation and identify current production amounts, see who is making what and in what quantities,

identify the population totals as more people are moving back to the reservation due to economic reasons, identify gaps-what is being produced and what do we need and then increase the food production on the Leech Lake Reservation.

There's also quite a few groups meeting to rate the indigenous foods on the reservation as well, as well as always bringing in more composting partners like the Cass Lake-Bena school.

I want to leave with a quote from the great law of the Iroquois: "In our every deliberation, we must consider the impact of our decisions on the next seven generations".

(Speaker 3): Have you seen any other interest from the local tribes or from Bemidji Area tribes in trying to incorporate composting into their solid waste programs?

Yes, none so developed as Leech Lake but on several of the reservations that I'm detailed to have definitely expressed interest in wanting to use the Leech Lake model at their sites, it's just a matter of getting people together and getting an active green team.

That was the biggest thing with the Leech Lake green team that made it move forward.

(Speaker 4) I got a question for the composting.

Do you know if any IHS clinics or hospitals are doing this?

(Speaker 2) That's a great question.

I'm not aware of any, and I would love to start working with any that would be willing or interested.

Does anyone on the call know of any that are composting yet?

(Speaker 5) I think when we were out at Pinon a couple of years ago, they had a little gardening competition so the different departments within the facility had a little plot in their garden and they were growing things and I think people there were composting. I don't know if it was an official clinic-wide thing because they don't have a kitchen there but I think people put their food wastes and brought scraps from home and that kind of thing.

(Speaker 2) That's a great idea and the ones here, the White Earth one doesn't have a kitchen either, but that would be great if we could start with IHS to compost, that's a great example.

We're composting in our office if that counts.

We have composting bins here as well as at the District office and the Area office and individual people take the compost home with them to their own composting pile.

(Speaker 1) In the meantime, if you're interested in getting this presentation, please contact me, Stefanie Pecos-Duarte at EHSC, or you can contact Megan directly, is that right Megan?

Speaker 4: I assume the composting is on-line, correct?

That they're actually composting now at the school?

(Speaker 2) Yes, yes, it is on-line, fully on-line at the college and at the Bug O Nay Ge Shig school.

The Palace Casino is on-line for their grounds crew;

we're having a few troubleshooting issues with getting the kitchen waste out there and getting only compostable out there in that garbage so we're working with them on getting that more on-line and then the Cass Lake-Bena school will be composting hopefully by December.

Speaker 4: And they determine what they're going to do with compost after it's cycled through?

Speaker 2: Yes, Yes.

Many of the sites will be using it on their sites.

The Casino will be using it in their landscaping for the most part, but the other sites, we really are encouraging garden production and food production, so the Bug O Nay Ge Shig school has their greenhouses, and it will be used in those greenhouses, as well as the tribal college, we're working with them to kind of get a garden site going.

They do have some small garden sites presently going and then once we have access to where the site has enough and is having excess compost, then it will go out to the elderly nutrition programs, where it will be handed out to the elders for their backyard gardens.

We've been working with the SHIP program, which is the Statewide Health Improvement Program.

They're iffy on funding so they don't always have a coordinator, but when they do, they're operating 64 backyard gardens and 18 community gardens that we can use the compost in all those sites, as well as they have people that go out and help elders with their backyard gardens if they need some assistance.

That's the plan for the compost as of right now.

Speaker 1: How long has your oldest participant been participating in the composting, Megan?

Speaker 2: That's a good question, we started this process in late 2010, and then everyone built their bins over 2011.

The school has been composting the longest.

The grounds crew started the beginning of last school year so that was like September of 2011 but they didn't start with their food scraps until May 2012 because they were designing their bins and having the kids build them and things like that.

So this summer really is the first summer we've been all out composting at the Bug O Nay Ge Shig School, food and ground waste, as well as the tribal college that started this September, getting all their waste to the compost bin.

We're still very new and as we continue we'll have more information on actual diversion pounds and things like that.

We also have to work with our solid waste division to work on the way they charge because right now they're just charging per trip and not weighing and things like that.

We're working with them to get the details out.

(Speaker 4) Have you gotten any feedback from the kids, especially in the high school, if they've taken this knowledge back to their own home and started composting at home?

(Speaker 2) We don't have any concrete data on that but we do have a lot of kids, just hearing through the grapevine of their experiences and through John out at the Bug School.

He's had several students go with him in his traditional learning classes from middle school age on up and he actually had two of his graduating seniors last year come in and present to the Bemidji Area staff at an area staff meeting and they were kind of able to give their take on composting and what they've learned and the benefits of it.

As well as, you know Minnesota, the State, also this year, I think is the first year that it went into effect, but they're requiring all students who graduate from the 12<sup>th</sup> grade to know how to compost, how to garden and how to recycle.

So we know that they're learning that, as well as out at the Bug O'Nay Ge Shig School they're doing community classes on food preservation and there's more talk on composting and things like that and there's more interest of people asking the solid waste division where they can take their compostable items from their home because right now they can't just take it to the different sites so we want to set up some place for the community to bring in their compost material and it will be maintained by probably the solid waste division.

So there's definitely more interest but we just don't have any concrete data on that just yet.

(Speaker 1) We'll wrap it up.

Thank you for participating.