KEEPING IT CLEAN

KEEPING ALASKAN'S HEALTHY

Host Site: Juneau, Alaska March 4, 2009

Continuing the Health Caucus study of Alaska State departments with significant health related responsibilities, in addition to the Department of Health and Social Services, the March forum included the Department of Environmental Conservation. There were eight presenters including officials with the State's Department of Environmental Conservation, perspectives from Alaska Native Tribal Health Consortium, community collaborative and advisory groups.

Presenters:

Troy Ritter – Environmental Health Coordinator, Alaska Native Tribal Health Consortium – Division of Environmental Health Engineering: *Recent research suggesting health benefits from water & sanitation improvements in rural Alaska.*

Kristin Ryan – Director, Environmental Health Division, Alaska Department of Environmental Conservation: *Overview of Departmental responsibilities to protect Alaskans from unsafe environment*

Lynn Kent – Director, Division of Water, Department of Environmental Conservation: *Maximizing Alaska's water quality*

Dora Mae Hughes – Senior Office Assistant, Alaska Native Tribal Health Consortium – Division of Environmental Health Engineering: *Water and struggle for quality of life in rural Alaska*.

Steve Weaver, P.E. – Senior Director – Alaska Native Tribal Health Consortium, Division of Environmental Health Engineering: *Alaska rural utilities-collaborative, strength in numbers – deliver safe water, working together.*

Robin Richardson – Member, & Manager, Global Food Collaborative: *Food safely and dependably provided by sustainable Alaskan businesses.*

Don Harman – Member, Food Safety Advisory Group, 25 years Alaska Airlines Food Quality Manager: *Safer cargo and food containers to communities throughout Alaska.*

Pamela K. Miller – Founder and Director, Alaska Community Action on Toxics: *Working with communities facing significant environmental health issues.*

Private Sector Environmental Partners
Health Benefits from In-home Water in Rural Alaska

Alaska Native Tribal Health Consortium

Troy L. Ritter

Environmental Health Specialist Troy Ritter traveled to Juneau to present dramatic new findings by the Alaska Native Tribal Health Consortium's (ANTHC) Neonatal Health Division on rural sanitation's impact on health. Ritter explains his primary responsibilities as the Environmental Health Coordinator. His work conducting surveys to ensure that village water systems are producing safe drinking water led to increasing questions. For answers about effectiveness of water and sanitation improvements in rural Alaska from the Federal Environmental Protection Agency, he partnered with a researcher from the Center for Disease Control, Thomas Hennessy, to satisfy his concern and to collect specific data from Alaska.

The research and data tracking became a practical way to apply the knowledge he was gaining in a master's level research class. "We worked on the study in our spare time

while doing our real job. I wanted to show the rest of the world what I was seeing using real data that they could believe," declared Troy Ritter.

Before the research was completed, Senator Lisa Mukowski requested permission to use the preliminary findings to demonstrate evidence that water and sanitation improvements in rural Alaska are effective. The preliminary findings convinced federal officials to continue funding for rural Alaska. Since then the results of the completed study have been published in the *American Journal of Public Health* and have generated increased interest and studies.

"When I first saw the statistics, I honestly thought there was a mistake. We couldn't believe how high the rates were. Last summer I sat with a village resident while they unplugged his four-year-old daughter's life support machine. She died from persistent respiratory distress that resulted from acquiring one of these serious infections at such an early age." said Troy Ritter

This study indicated that lower levels of water services are associated with a higher burden of hospitalizations for pneumonia and influenza, skin infections, and lower respiratory tract infections.

"About one in three rural Alaskan homes lack indoor water and flushing toilets," reported Troy Ritter. When asked if data demonstrates a change in health status in villages with piped water, he responded that four villages are being studied for additional verification. The process is expensive and it takes at least three years verify health status changes.

Villages that currently lack water and sanitation improvements are those with environmental circumstances that present complicated engineering challenges. These villages will require more expensive and, or resourceful solutions.

"Each season has an infectious disease burden," Ritter noted. "In the spring, it is diarrheal illness, in summer, it is skin infections, in winter, it is respiratory illness. Having piped water and sanitation make it easier and more convenient to stay healthy. Health education can help residents of unserved communities with strategies to protect themselves from infectious disease. The pipe in the ground doesn't make anyone healthy without healthy practices and behaviors."

FINDINGS:

- Infants in villages with limited water service have 5 times more hospitalization for Lower Respiratory Tract Infection (LRTI)
- In villages with the lowest level of water service, about 1 in 3 infants are hospitalized each year for LRTI
- Infants in villages with limited water service have 11 times more hospitalization for pneumonia compared to the U.S. population

Economic benefits of reduced respiratory infections associated with piped water:

- Piped water may cut clinic visits for lower respiratory tract infections by half
- Piped water may reduce hospital visits for lower respiratory tract infections by a third
- Piped water may reduce severity of lower respiratory tract infections
- Preliminary data suggests that piped water may save ~$2.2 million annually per 1,000 children in direct health care expenditures alone

Study of Invasive Pneumococcal Disease and in-home water service:

- The lack of in-home water is associated with increased rates of Invasive Pneumococcal Disease, which includes serious ear infections, pneumonia, meningitis and blood infections
- Residents of Southwest Alaska suffer some of the highest rates of Invasive Pneumococcal Disease in the world.

Ritter went on to present data that indicates the importance of piped water and dental health. A 1999 Indian Health Service report stated that Alaska Natives have "the worst dental health status in the U.S." He pointed out that only piped water systems can safely support community water fluoridation. Study findings show children from non-fluoridated villages have two to three times more dental decay than the children from villages with fluoridated water.

Conclusions and Recommendations:

- Increased access to in-home water may prevent a broad spectrum of debilitating diseases in Alaska
- Investments in water infrastructure may yield substantial cost savings through reduced medical treatment
- Further research is needed to better understand water-related disease transmission
- Provision of sanitation infrastructure should be paired with interventions to encourage proper water use

Alaska Department of Environmental Conservation

Kristin Ryan

"The mission of the Division of Environmental Health (EH) is to deal with the basics: safe drinking water, food and sanitary practices. Our goal is to provide businesses with clear standards so that they can protect our environment, provide safe food and drinking water to Alaskans," said DEC's Environmental Health Division Director Kristin Ryan.

Air Division

The programs in the Air Division of the department are designed to regulate air emissions so they do not harm public health. Some examples are: requiring diesel to lower sulfur content; monitoring regional haze, particulate matter from wood stoves, glacial dust and carbon monoxide levels.

Division of Environmental Health

The Division of Environmental Health deals with the basics of public health: safe drinking water, food and sanitary practices. "Our goal is to provide businesses with clear standards so that they can protect our environment and

provide safe food and drinking water to Alaskans," Ryan related. The division's Drinking Water Program requires compliance with the state drinking water regulations, in accordance with the Federal Safe Drinking Water Act and Amendments. "The regulatory maze of these systems is complex and changing as new science emerges," she noted. "For example we have recently reduced the level of acceptable arsenic from 50 ppm to 10 ppm."

Water System Challenges

The division is charged with overseeing water systems and each category of systems has their own set of requirements they must meet.

There are 18 separate rules for Alaska's 1,600 public water systems. Yet approximately 5,000 systems serving drinking water to more than one Alaskan household exist in the state without any oversight. Some of the systems without any oversight serve public facilities such as day-care programs, gas stations, and office buildings. In other states these are regulated by local governments. There are 272 systems using surface water and 1,321 systems using ground water.

Food and Sanitation Challenges

Another responsibility of the Division of Environmental Health is food safety and sanitation oversight. This program regulates over 5,000 food establishments and public facilities covering everything from seafood processors to pools, spas and tattoo parlors. In the last five years, there has been an increased focus on training and testing of food handlers, with over 40,000 people passing the online test.

Faulty Inspection Challenge:

Inspections are not frequent enough to ensure compliance. On average, Ryan stated, the division visits facilities once every three years.

New environmental health laboratory: conducts chemical and microbiological sampling of food, water, soil and animals. To ensure commercial and municipal laboratory standard compliance, they complete analysis of soil and drinking water. Over 80,000 tests were conducted last year.

Pesticide program: ensures pesticides sold in Alaska are registered and approved for use in the state. The division

A major challenge to the health of smaller communities without the ability to meet health safety standards. Only 26% of Alaska's garbage handling facilities meet those standards.

provides training and certification for businesses applying pesticides.

Solid waste program: regulates 2,000 landfills. The great majority of small communities have open dumps that are hazards to public health with disease-causing health dangers. A major challenge is that requirements to meet health safety standards exist in only 26% of Alaska's garbage handling facilities. This is another indication of affordable protection disparities in rural Alaska.

The state veterinarian: authorizes and monitors import and export of pets, domestic livestock, and veterinary medical products. Following, as well as controlling, new and emerging animal diseases and agriculture-based-bioterrorism threats also falls under the state veterinarian's responsibilities.

Division of Environmental Health

Lynn Kent

The Village Safe Water Project: works directly with Alaskan communities to build sustainable sanitation facilities. The state spends $60 million each year for water treatment, storage, distribution; sewage collection, treatment, and disposal systems; and solid waste management facilities. Approximately half of the systems are managed by the Alaska Native Tribal Health Consortium.

Project Progress and Challenge: Over the last nine years, the percentage of rural Alaska homes served by adequate sanitation facilities has increased from 66% to 89%, a 2.5 % annual average increase. During the last four years, the cost of addressing rural Alaska sanitation needs has increased by over 35% while funding to address these needs has decreased by 35%. Currently there is a $351 million dollar gap between needs and available funding.

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Operator training and certification falls under the responsibility of the Division of Water. Training and certification of operators of water and sewer systems ensures the safe operation of facilities. The division is developing the capacity of rural Alaskans to operate local water and sewer facilities, in order to safeguard state and federal capital investments.

The Division of Water evaluates and revises water quality standards to protect Alaskan water sources for many uses.

Wastewater Discharge Permitting and Compliance is another function of the Division of Water. Discharge permits control discharges from community domestic wastewater systems, oil and gas industry, timber industry, cruise ships, seafood processors, construction industry and mining.

The DEC has authority to take enforcement action against water facilities found out of compliance through inspections or water quality data monitoring.

There are currently over 2,000 known contaminated sites in Alaska. Contamination of groundwater is the most serious problem in Alaska and the most costly to solve. Many sites currently listed on the inventory have drinking water which exceeds state and Federal Environmental Protection Agency health standards for contamination. Others contain populations of fish and other wildlife, on which many Alaskans depend for subsistence, sport, and commercial harvest, may be impaired. Contamination may result in significant economic losses.

These site cleanup operations are regulated by DEC and in cooperative collaboration completed with other local, state and federal agencies.

Alaska Native Tribal Health Consortium

Dora Mae Hughes

On the day of the Health Caucus, Dora Mae Hughes had just returned from her childhood home in Teller, Alaska. Teller is located on a spit reaching into Port Clarence Bay on the Seward Peninsula. The village of 269 lies 72 miles northwest of Nome.

According to Alaska Native Tribal Health Consortium records, Teller is one of many communities without piped water and sewer. During summer, water is hauled from the Gold Run River (20 miles away) by the city water truck, and delivered to home storage tanks. A few residents use their own ATVs or snow machines to haul water. During winter, treated water is delivered from a large storage tank at the washeteria, or melt ice is used from area creeks. Preliminary work has begun on a piped water and sewer system, however, a new water source must first be developed. Wells have proven unsuccessful. The school operates its own sewer system. Honey buckets are used by 42 residences, which are

Homes without inside Potable Water...either hauled or piped from unsafe sources:

Total US Homes...
less than
one percent.

Total Alaskan
Rural Native
Homes...
26 percent.

“Running water would mean,”

- *“My kids get to take a bath and I think they’ll be healthier.”*
- *“I can clean everyday. I can use water everyday.”*
- *“No more spilling of bins (full of sewage) in areas people walk.”*

hauled by the city. A few homes and facilities have septic tanks. A new landfill is under construction. The community participates in hazardous waste collection.[1]

One of her activities during her visit home, related Dora Mae Hughes, was hauling bags of honey bucket waste in boxes from the home of her great-aunt and uncle to the village lagoon. The lagoon is six miles out of town.

Villagers collect fresh snow for water and collect rainwater in barrels from drafters on the roof for home use, or from the community washeteria. A city water truck collects water from the river 20 miles away, but the increased expense of fuel and maintenance for the truck has raised the cost of hauling water. Higher fuel prices have made heating water for the washeteria too expensive this winter.

Children are tasked with carrying honey buckets to the dumpsite. Spillage happens, with the thaw and rains the spilled waste is tracked into homes, creating a greater health hazard for infants and toddlers.

There are currently over 2,000 known contaminated sites in Alaska.

Rural Communities working together to deliver safe water.

- Chevak
- Russian Mission
- Chignik Lake
- Savoonga
- Goodnews Bay
- Sleetmute
- Grayling
- South Naknek
- Lower Kalskag
- Tooksook Bay &
- Upper Kalskag

Alaska Rural Utilities Collaborative Members

Steve Weaver, P.E.

ANTHC works with a group of eleven villages who hve joined together to provide more affordable methods of improving conditions for each community.

Collaborative Purpose: Provide good water every day to rural Alaska.

The premise of the collaborative is strength in numbers. Shared costs and purchasing power is resulting in reduced cost for collaborative members. Centralized management is producing an increased number of certified operators and reducing turnover in operational staff. Collaborative management is also ensuring system sustainability with member villages having money in reserves for bulk fuel purchase, equipment maintenance, accurate and reliable accounting records. One hundred percent of the collaborative communities’ utility systems comply with Rural Utility Business Advisor standards, which is necessary for grant funding.

Alaska Rural Utilities Collaborative 11-member communities' average costs: An average conventional water and sewer system rate is $60 to $160 per month. The vacuum water and sewer system averages for 170 customers is $85 per month.

Food Safety

Robin Richardson

Global Food Collaborative (GFC), LLC. is a private, Alaska-based, commercial business. Its 'clients' are members who pay an annual fee to be part of the collaborative. Its purpose is to support sustainable business for those in Alaska's food, beverage and agri-products industry.

Robin Richardson, President, of the GFC explained "The business came about as a result of my work with a number of companies who were harvesting, growing and manufacturing food and related products. They had similar supply chains and similar challenges.

Businesses that participate in the GFC are as diverse as air cargo, paper product distributers, freight forwarders, food manufacturers and beverage brewers. Its members include businesses representing all of the supply chain. GFC affiliated businesses benefit from connecting to each other and markets build for sustainability and provide business resources and information.

Healthier, fresher food and reducing obesity is the goal of nearly every major commercial food buyer, such as grocers, tour operators and school districts. These Alaskan businesses have an inter-dependent food-web relationship rather than being compartmentalized.

Collaborative Successes:

Taco Loco (Anchorage) created an Alaska salmon wrap as a direct result of the Alaska School Nutrition Association's need for a high protein, safe, affordable, easy to prepare and serve product. "We took those specifications to Taco Loco who established a product and began manufacturing and serving the product to Alaskan students in 2008. This is the only product to my knowledge that was specified by Alaska buyers, harvested in Alaska (salmon), primary processed, secondary processed, packaged, transported, served and eaten by Alaskans," said Robin Richardson.

Full Circle Farms, a Community Supported Agriculture[2] in Washington State, delivers fresh produce to Alaskans through 150-drop sites statewide as the result of an Alaskan invitation for healthy alternatives and alliances with health oriented organizations and programs. They are especially mindful of the contribution fresh produce can make to health and quality of life.

Robin Richardson noted two Alaskan women advocates of Alaskan food sources and the link to health. Ellen Frankenstein is producing a film and a student curriculum about Alaska food sources and its connections to health. Marion Owen offers food and health education through community learning gardens.

Features of TEDSBOX:

- *Zero CO^2 emissions.*
- *Time and temperature quality is tracked through technology.*
- *Lockable and tamper-evident latches prevent contamination.*

Shipping and Food Safety

Don Harman

Alaskans that import goods know the importance of shipments maintained at the right temperature. Recognizing the limitations of traditional shipping containers, Don Harman set out to find better solutions after his years of engineering safe commercial food deliveries via air. The product he developed and continues to improve for shipping temperature sensitive goods is the TEDSBOX technology.

Tracking Environmental Deviation System (TEDS) new technology ensures that shipments are the freshest possible. Testing has proven that the technology maintains both hot and cold temperatures within TEDSBOX shipment containers in excess of 110 hours without recharging or indefinitely while plugged in.

Alaska Native infants have a much higher rate of hospitalization for infection than any other group of U.S. infants… Prenatal exposure to contaminants, which are known to affect the developing immune system, could play a role, and that possibility is now being examined."

Environmental Toxics

Pamela K. Miller

Alaska Community Action on Toxics (ACAT) exists to ensure justice by advocating for environmental and community health. The organization responds to community calls for assistance and conducts community-participatory research and health investigations. Advocating for health and justice through prompting of protective, precautionary local, state, national and international policy changes is a key role of the organization.

Pamela Miller cited Dr. Jim Berner, a pediatrician with the Alaska Native Health Consortium about the concern of prenatal exposure to contaminants.

Contaminants in the north threaten the health of peoples that rely on traditional diets of fish and marine mammals.

Data from the Alaska Birth Defects Registry shows:

- Birth prevalence of major congenital anomalies in Alaska is twice as high as in the United States as a whole
- Alaska Native infants have twice the risk of major congenital anomalies as white infants born in Alaska

Mothers residing in villages with high hazard ranking were:

- 43% more likely to have a low birth weight baby
- 45% more likely to give birth prematurely
- More likely to have babies afflicted with intrauterine growth retardation[3]

"The north has become a hemispheric sink for pesticides and other industrial chemicals with considerable evidence of chemicals affecting plants and animals. Along with chemical contaminants, Alaska has numerous toxic waste sites associated with military and other governmental activities," stated Miller

Independent research is informing clean-up decisions and helping to properly diagnose and determine treatment of environmental health effects.

Recommendations:

Better oversight is needed and the military needs to be held more accountable for cleaning up formerly used defense sites. Preventing exposures to toxic waste sites is an important public health policy and role.

(Footnotes)

1 Bering Strait Coastal Resource Service Area, Coastal Management Plan, Final Draft Plan Amendment, Appendix D: Community Profile

2 http://www.nal.usda.gov/afsic/pubs/csa/csadef.shtml

3 Gilbreath, S. and Philip Kass. 2006. *American Journal of Epidemiology*.