

TUESDAY, May 25

Engineer Category Day Agenda

Room: TBD

7:45 am - 8:00 am **Welcome and Introductory Remarks**
CDR Hilda Scharen, USPHS

8:00 am - 8:30 am **Where are we going from here?**
RADM Sven E. Rodenbeck, Sc.D, PE, BCEE (Chief Engineer
Officer) USPHS

This session will examine the trends, challenges, and issues facing U.S. Public Health Service (PHS) engineers in the years ahead.

At the end of the session, participants will be able to:

1. List the key goals of the PHS Chief Engineer.
2. Explain the significant impact PHS Engineers have had in promoting, protecting, and advancing the health and safety of our nation.
3. Identify three challenges facing PHS engineers in the coming years.

8:30 am - 9:00 am **Leadership in Energy and Environmental Design (LEED) buildings and sustainability: The financial connection**
Lee LoBaugh

This session will discuss the financial benefits of LEED and energy efficient buildings including job creation and cash flow increases through demand reductions and operational improvements.

At the end of the session, participants will be able to:

1. Identify the financial benefits of LEED Buildings.
2. Describe the financial incentives that align with LEED buildings and how to effectively implement them into a LEED project with a cost neutral approach.
3. Identify potential approaches to building tax and utility incentives into a LEED building project to maximize all potential incentives and not disqualify a project for any potential incentives.

8:30 am - 9:30 am **The effect of LEED buildings on health care and the health of the users**
Katrina Rosa, RA, LEED AP, GPR, CGBP, BB

This session will examine data substantiating the improved health of the users of a sustainable, “green,” building. The presenter will explore the current design guidelines being mandated in all federal buildings, as well as many state and city building projects. The session will look at strategies being integrated into today’s sustainable buildings that are specifically designed to support the health of the users. The presenter will identify the current data reporting decreased healing time, shorter hospital stays, fewer sick days, and improved worker productivity in buildings that have been built to meet sustainability standards.

At the end of the session, participants will be able to:

1. Describe how to certify a building as sustainable under the U.S. Green Building Council guidelines.
2. List the sustainable strategies that are integrated into building design to optimize healthy indoor environments.
3. Identify the data documenting improved health and productivity in green buildings.

9:30 am - 10:00 am

Learning the lessons of LEED- The Blue Ridge Parkway visitor’s center

LCDR Nathan Epling, PE, MCE, USPHS

The session will examine how in 2007, the Blue Ridge Parkway completed the construction of one of the first LEED-certified buildings in the Nationals Park system. This building incorporated various sustainable technologies, such as passive solar heating, energy recovery ventilation, and a green roof. The center also met the interpretive and administrative objectives planned by the park and non-profit organizations. While this was an achievement for an agency that specializes in natural resource protection, there were trade-offs made in seeking the U.S. Green Building Council’s certification levels within funding limits. These trade-offs often result in positive outcomes for the facility and its management, but also can bring unknown challenges to typical operation and use of the facility. Over the past few years, the Blue Ridge Parkway maintenance and engineering staff have experienced and learned from these challenges. This presentation will describe the specific sustainable technologies used to achieve LEED Gold certification as well as the performance of the building several years after construction.

At the end of the session, participants will be able to:

1. Describe the basic requirements for LEED certified building construction.

2. Describe the LEED aspects of the Blue Ridge Parkway visitors center.
3. Identify the long-term effects to operation and maintenance for LEED certified buildings.

10:00 am - 10:15 am **BREAK**

10:15 am - 10:45 am **Supporting global public health through the development of sustainable containment laboratories in developing countries**

William B. Ridenhour, P.E., CPE

This session will look at the use of sustainable containment laboratories in developing countries. Microbiological high containment laboratories (BSL-3) are difficult to design and construct. Add to the normal array of design constraints the absence of reliable infrastructure and add to the normal construction restrictions the absence of readily available building materials and you have the recipe for an even more imposing design and construction challenge. Using two separate design and construction projects undertaken in West Africa as examples (BSL-3 and BSL-2 TB/HIV laboratories in Mali & BSL-2 and Analytical Chemistry Laboratories in Nigeria), this presentation will demonstrate how each of these challenges can be turned into unique opportunities to develop fully sustainable containment laboratories complete with support space, equipment redundancy, and reliable stand-alone infrastructure. The lessons learned from the development of these two laboratories facilities can also be applied to U.S. laboratories, especially remote single module containment facilities.

At the end of the session, participants will be able to:

1. Articulate key cultural and geographical differences in how containment laboratories are designed and implemented in Third World countries in comparison to industrialized countries.
2. Explain how in-country equipment can be specified to satisfy critical equipment requirements.
3. Describe simple yet novel design features employed to enhance laboratory sustainability.

10:45 am - 11:15 am **Using reclaimed wastewater for pasture land restoration on the Santo Domingo Pueblo**

LT Quentin Allen, P.E., USPHS

This session will look at a case study addressing issues related to the protection of drinking water and the reuse of treated wastewater. The existing wastewater treatment system on the Pueblo of Santo Domingo consists of a series of six, lined and unlined lagoon cells with a total storage capacity of approximately 29 million gallons (MG). The projected annual hydraulic surplus of 18 MG is currently seeping through the saturated lagoon floors into the ground water which is near the Rio Grande. The Indian Health Service (IHS) is assisting the Pueblo in developing alternative means of disposal to manage the surplus wastewater and help protect the Rio Grande. In addition to the issues discussed above the Pueblo of Santo Domingo has overgrazed pasture lands and run the risk of losing livestock due to the scarcity of plentiful grass lands. A water supply abundant enough to irrigate ranch lands is not available or feasible. The IHS has proposed to construct a wastewater lift station, a force main, and an irrigation system to utilize reclaimed wastewater for the restoration of pasture and grazing lands. This project demonstrates how challenges can be turned into unique opportunities to develop fully sustainable methods for wastewater treatment while benefiting the livestock and rangelands of the Santo Domingo Pueblo.

At the end of the session, participants will be able to:

1. Identify options for managing wastewater in small communities.
2. Describe the benefits of using reclaimed wastewater.
3. List key components in determining the suitability of a site for reclaimed wastewater.

11:15 am - 11:45 am **Improving the water sanitation through biosand filtration as part of continuing Promise 2009**
LCDR Ryan Costello, USPHS and LT Kurt Kesteloot, MSE, P.E.,
USPHS

This session will look at the challenges of developing sustainable water treatment methods in third world or unindustrialized nations all over the planet. While aboard the USNS Comfort, USPHS officers along with fellow Navy and civilian shipmates installed Biosand Filtration Units (BSF) into individual family homes in a small community outside of San Alejo, El Salvador. The BSF removes bacteria such as Escherichia coli and other contaminants from water, rendering water from most contaminated sources safer for consumption after flowing through the filter. The BSF works well for individual homes with low water consumption. The sand media and materials required to make the BSF are readily available almost anywhere in the world. The operation, maintenance, and

technological expertise required by the owner of a BSF are minimal. The life expectancy of the BSF and quality of the water that it provides are still under investigation. However, regardless of its deficiencies, the biosand filter is providing cleaner drinking water to rural communities in need and it may prove to be a low tech, low cost solution to a global public health problem.

At the end of the session, participants will be able to:

1. Describe the importance of biosand filtration units in developing nations.
2. Describe the basic theory and design of a biosand filtration unit.
3. Identify the importance of sustainability and the need for minimal operation and maintenance for a biosand filtration unit.

11:45 am - 12:30 pm **BREAK**

12:30 pm - 2:00 pm **LUNCHEON**
Awards Ceremony and Question and Answer Session with
RADM Sven Rodenbeck, USPHS

2:00 pm - 2:30 pm **Water and wastewater pipe: Design considerations for pipe material life cycle impacts to the environment and health**
CDR Brad Rea , USPHS, and LCDR Luke Schulte, USPHS

This session will compare and contrast the indirect public health impact that result from the selection of various water and wastewater pipe materials.

At the end of the session, participants will be able to:

1. Explain why the consideration of indirect health effects in the design of sanitation facilities is important.
2. List the public health arenas affected by the choice of a specific piping material.
3. Identify the piping material(s) most likely to promote public health.

2:30 pm - 3:00 pm **Incorporating prevention through design (PtD) principles into voluntary consensus standards**
CAPT G. Scott Earnest, PhD, PE, USPHS

This session will discuss the incorporation of Prevention through Design (PtD) principles into consensus standards. Such standards are widely used and recognized within industry and are often more current than many Occupational Safety and Health Administration

(OSHA) standards. Efforts are being made to incorporate PtD concepts and principles into several different key consensus standards in multiple industry sectors.

At the end of the session, participants will be able to:

1. Describe the American National Standards Institute (ANSI) and its important role in writing consensus standards.
2. Describe the importance of voluntary consensus standards and list 4 consensus organizations.
3. Describe the concept of prevention through design and the hierarchy of controls and list key components

3:00 pm - 3:15 pm **BREAK**

3:15 pm - 4:15 pm **Engineers in paradise -- PHS Officers in U.S.-Affiliated Pacific Islands**

John McCarroll, P.E.

The presenter will examine public health efforts in U.S. territories in the Pacific -- including American Samoa, Guam, and the Northern Mariana Islands. These areas cannot take for granted clean, safe water. For example, the island of Saipan, with about 70,000 residents, is the only municipality of its size in the U.S. without 24-hour water. Into this situation have stepped a handful of USPHS engineers, who have worked to improve water and wastewater service. This presentation will describe the water and wastewater conditions and situations that PHS engineers have addressed in the Pacific, list some their accomplishments, and identify opportunities for PHS assignments on Pacific islands.

At the end of the session, participants will be able to:

1. Describe water and wastewater conditions in U.S.-affiliated Pacific islands.
2. List some of the projects undertaken by PHS engineers in the Pacific and the results.
3. Identify opportunities for engineering assignments on Pacific islands.

4:15 pm - 4:45 pm **Finding residential energy solutions through energy modeling**
CDR Michael R. Young, P.E., USPHS

This session will explore how to find residential energy solutions through energy modeling. Energy conservation is an emerging priority within the Indian Health Service. In its staff quarters design, IHS is required to comply with the 2004 International Energy Conservation Code (IECC), and exceed the IECC baseline

by 30% using the simulated performance method, if life-cycle cost-effective (stipulated in 10 CFR 435). To address this requirement, IHS has simulated the performance of the design for a 3-bedroom staff quarters unit at Fort Belknap, MT (currently under construction). The quarters being studied are exempt from the 10 CFR 435 requirement. This session will examine the lessons learned.

At the end of the session, participants will be able to:

1. Describe energy efficiency in residential building design in the context of federal regulations.
2. Summarize the most effective ways to achieve energy savings, while finding the highest life cycle cost savings.
3. Justify capital expenditures that will save energy, keep energy prices lower for the occupants, and comply with federal regulations.

4:45 pm – 5:00 pm **Concluding remarks**