

2014

SOUTHWEST
ONSITE WASTEWATER
CONFERENCE

January 29th-30th, 2014

Riverside Resort, Laughlin, Nevada





Arizona County Directors of Environmental Health Services Association

Jake Garrett, President
PO Box 1234
Phoenix, AZ 85003
(123) 456-7890

Welcome to the 2014 Southwest Onsite Wastewater Conference! This 9th biennial presentation of the conference brings you the latest in onsite wastewater research, technology and practice. We started almost two decades ago as a means for Arizona county environmental health programs to provide training for their onsite wastewater employees. With each conference the organizing committee looks at the current breadth of practice in onsite wastewater management to provide you with knowledge of advances and practices in the field.

Our conference theme, *New Challenges/New Directions* summarizes many of the topics that fill our program agenda. Reuse of onsite wastewater, antibiotic resistance, alternatives to septic tank systems and indicator organism selection for onsite wastewater treatment are new concepts for many of us. However, the agenda also includes presentations on issues that are more common today: maintenance of aerobic treatment units, enforcement to correct malfunctioning onsite wastewater systems, and soil treatment unit design research.

We are honored to have a distinguished faculty of practitioners. They come from academia, industry and government. All have volunteered to provide you with the benefit of their experience. They are anxious to hear your questions as part of their presentations and to visit with you during breaks and at the Wednesday evening mixer.

Our exhibitors bring information on the latest equipment and services of interest to you. Please visit them all and take advantage of their expertise by discussing your activities with them. The support from our exhibitors helps us keep the cost of this conference low. We thank them for that support.

Now it's up to you. I urge you to take full advantage of the vast array of expertise and experience possessed by the conference participants, speakers and vendors. Meet everyone! Make new friends and business contacts, and enjoy the camaraderie.

Thank you for attending.

Jake Garrett
ACDEHSA President

Kevin Chadwick
Conference Chairman

2014 Southwest Onsite Wastewater Conference

EXHIBITOR LOCATION MAP

CONFERENCE SPONSORS

Gold Level:

Anua
Colin Bishop
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Whitefield, NH 03598
800-473-5298
www.presbyenvironmental.com Booth 5

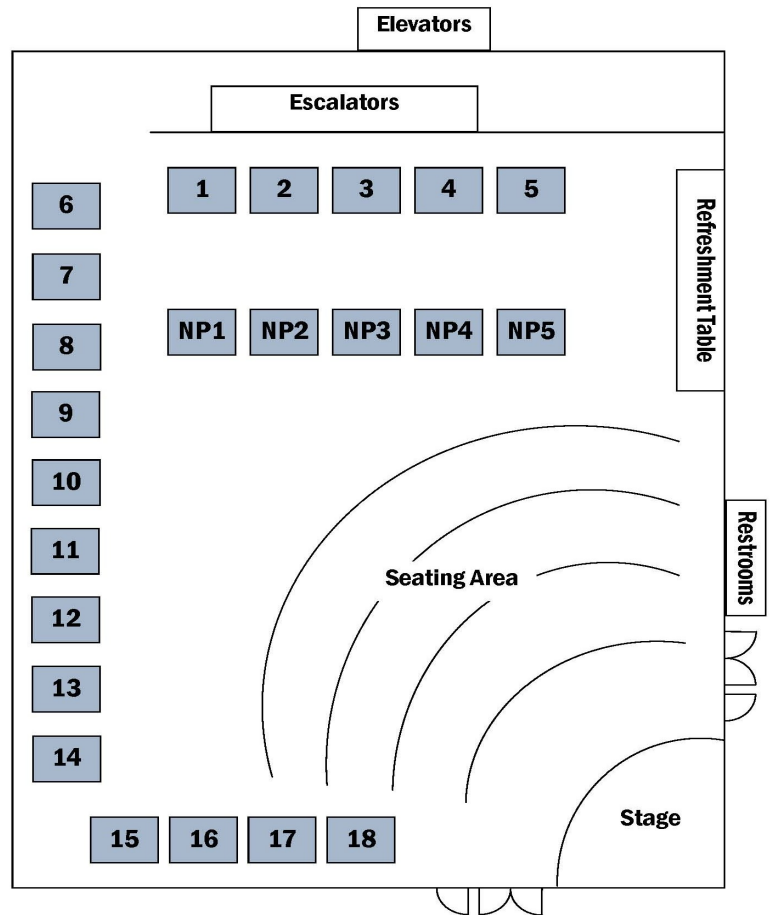
Salcor, Inc.
James Cruver
P.O. Box 1090
Fallbrook, CA 92088
760-731-0745
jsruver@aol.com Booth 8

Silver Level:

Eljen Corporation
James Donlin
125 McKee Street
East Hartford, CT 06108
800-444-1359
www.eljen.com Booth 13

Bronze Level:

Jensen Precast
Mike Elliott
825 Steneri Way
Sparks, NV 89431
775-352-2700
www.jensenprecast.com Booth 2



EXHIBITORS

Advanced Drainage Systems
Derek Ramsey
505 N. 51st Ave.
Phoenix, AZ 85043
602-415-3989
www.ads-pipe.com Booth 14

Applied Process Equipment
Richard Sinclair
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Scottsdale, AZ 85260
480-998-4097
www.apewater.com Booth 10

Arizona Onsite Wastewater
Recycling Association
Bryan Chioldi
717 S. 5th Street
Prescott, AZ 86301
928-443-0333
www.azowra.org Booth NP3

Bio-Microbics, Inc.
Jim Bell
8450 Cole Parkway
Shawnee, KS 66227
913-422-0707
www.biomicrobics.com Booth 1

Columbia Southern University
Marilyn Smith
21982 University Lane
Orange Beach, AL 36561
251-923-2512
www.columbiasouthern.edu Booth NP1

EnviroSeptec
Kevin Green
23362 Madero, Suite C
Mission Viejo, CA 92691
949-305-0651
kevin@enviroseptec.com Booth 6

GeoFlow
Francois van der Spuy
506 Tamal Plaza
Corte Madera, CA 94925
800-828-3388
www.geoflow.com Booth 16

Infiltrator Systems
Eric Berquist
4 Business Park Rd.
Old Saybrook, CT 06475
860-577-7030
www.infiltratorsystems.com Booth 15

Jet, Inc
Edward Schloss
750 Alpha Drive
Cleveland, OH 44143
440-461-2000
www.jetincorp.com Booth 11

National Environmental Health Assoc.
Soni Fink
720 S. Colorado Blvd., Suite 1000-N
Denver, CO 80246
303-756-9090 ext. 314
www.neha.org Booth NP2

Orenco Systems
David Lepre
814 Airway Ave.
Sutherlin, OR 97479
541-459-4449 ext. 466
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Dave Holmes
3 Fairfield Blvd.
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877-765-9565
www.polylok.com Booth 4

Roth Global Plastics
David Hull
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Syracuse, NY 13211
315-579-3326
www.roth-america.com Booth 17

SJE-Rhombus
Mark McCollum
P.O. Box 1708
Detroit Lakes, MN 56502
218-847-1317
www.sjehombus.com Booth 7

Waterloo Biofilter Systems
Craig Jowett
P.O. Box 400, 143 Dennis St.
Rockwood, Ontario, CA
519-856-0757
www.waterloo-biofilter.com Booth 9

2014 Southwest Onsite Wastewater Conference

PRE-CONFERENCE SESSIONS

MONDAY AND TUESDAY, JANUARY 27-28, 2014

NAWT Inspection Training and Certification

8:00 AM - 5:00 PM

Dave Gustafson, P.E. / Jim Anderson, Ph.D.

Whether you are an experienced industry professional or just starting out in the business, you will find a great deal of value in the National Association of Wastewater Transporters, Inc. (NAWT) Inspection Training & Certification course. Your successful completion of the training will allow you to be recognized as a national certified inspector by NAWT you will be listed on a national registry of certified industry professionals for two years, and is part of the eligibility to becoming an inspector the Arizona Transfer of Property Inspection program. Certified Inspectors must complete a comprehensive onsite sewage treatment systems course covering terminology, treatment, tanks, construction methods, and application and pass a rigorous exam to receive national certification. There are only a selected number of professionals throughout the United States and Canada who have successfully completed both courses.

For class information: Contact Kitt Farrell-Poe / 520-621-7221 / kittfp@ag.arizona.edu

To register: Contact Janine Lane / 928-782-5882 / janinel@ag.arizona.edu

TUESDAY, JANUARY 28, 2014

UV Disinfection of Onsite Effluent

1:00 PM - 4:00 PM

Jim Cruver, Ph.D., President, Salcor Inc.

This workshop will present public health criteria for effluent disinfection in both soil applications and in direct discharge systems. The public health criteria for reuse of onsite-disinfected effluent from treatment units will be discussed. The general principles of UV disinfection will be outlined. The features of UV disinfection will then be compared with those of chemical disinfection. Design and installation considerations will then be discussed along with the operation and maintenance requirements for both systems. The presentation will summarize the procedures and results of 20 field studies that have involved the use of UV disinfection of effluents for both fixed-film and suspended growth aerobic treatment units. The test results will be analyzed with respect to the types of processes involved, and the resulting wastewater characteristics. Arizona Proprietary Product Listing (PPL) will be discussed.

EXHIBITOR SET-UP

TUESDAY, JANUARY 28, 2014

4:00 PM - 8:00 PM

EARLY REGISTRATION

TUESDAY, JANUARY 28, 2014

Conference Registration Desk Open

5:00 PM - 8:00 PM



WEDNESDAY

2014 Southwest Onsite Wastewater Conference

CONFERENCE SESSIONS

WEDNESDAY, JANUARY 29, 2014

Registration

7:00 AM - 8:00 AM

President's Welcome

8:00 AM - 8:10 AM

Jake Garrett, ACDEHSA President

KEYNOTE PRESENTATION: Onsite and Decentralized Wastewater Systems: Advances from a Decade of Research and Educational Efforts

8:10 AM - 9:00 AM

Robert L. Siegrist, Ph.D., P.E., B.C.E.E.

*Professor Emeritus of Environmental Science and Engineering, Civil and Environmental Engineering
Department Director, Small Flows Program, Colorado School of Mines*

Throughout the U.S. and worldwide, solutions to wastewater infrastructure need to be effective in protecting public health and preserving water quality while also being acceptable, affordable and sustainable. Onsite and decentralized systems have the potential to achieve these goals in rural areas, peri-urban developments, small towns, and urban centers in larger cities. These systems have evolved to include a growing array of devices and technologies that can be assembled to achieve varied discharge or resource recovery and recycling objectives. New mathematical models and decision support tools enable proper system selection and design for a particular application. To achieve needed advances in the science and engineering of onsite and decentralized systems, research and educational efforts have been essential. To help assure integration of the outcomes into practice, science and technology advances need to be translated for inclusion in practitioner outreach and regulatory programs. This presentation highlights research findings and educational activities carried out during the past decade within the Small Flows Program and associated centers at the Colorado School of Mines.

Decision Tools for Alternatives to Septic Tank / Leachfield Systems

9:00 AM - 9:50 AM

Professor Nicholas Ashbolt

School of Public Health, University of Alberta, Edmonton, Alberta, Canada

This presentation builds on work undertaken with the Cape Cod Commission on a systems approach (life-cycle analysis, health risk assessment & economics) of alternative decentralized approaches to aid in reducing the coastal eutrophication problem there in New England. We have community members trialing urine-diversion, dry composting toilets and we are investigating the residual graywater being treated via their septic systems or to reuse treated graywater within households, along with rainwater to supply hot water. Also, integrating nutrient recovery from the yellow water and from a separate blackwater pressure sewer in more densely populated areas for energy recovery via methane; all compared to the business-as-usual option of building a centralized sewer system to replace their failing septic-leachfield systems.

Conference Session Break

9:50 AM - 10:20 AM

Visit over 20 exhibitors

2014 Southwest Onsite Wastewater Conference

CONFERENCE SESSIONS

WEDNESDAY, JANUARY 29, 2014

Standardized Testing Methods for Aerated Wastewater Systems

10:20 AM - 11:10 AM

Steven DeHart, R.E.H.S., R.S.

Environmental Health Scientist, Riley County Planning and Development, Manhattan, Kansas

Alternative wastewater systems introduced into Riley County, Kansas in 1994 were sold as the “save all” that would allow a home to be built in areas unable to support a traditional septic system. Though the systems performed all necessary functions, they were installed with little or no training provided for the homeowner, contractor, or regulator. This created contentious maintenance issues over time, which were solved by the development of a set of standards; guidance on how to evaluate alternative systems; and education and practice in the field. Attend this session and learn about these testing methods.

Soil Treatment Units used for Effluent Dispersal and Purification

11:10 AM - 12:00 PM

Robert L. Siegrist, Ph.D., P.E., B.C.E.E.

Colorado School of Mines

Similar to a confined treatment unit (e.g., septic tank, packed bed filter), effluent dispersal into an unconfined soil profile can be conceptualized as a Soil Treatment Unit. The design and performance of soil treatment units was the focus of several research projects within the CSM Small Flows Program. Lab experiments, field studies and modeling examined the variables that affect system performance. The presentation will review the major processes that are important to the performance of a soil treatment unit. It will also discuss how improved understanding along with models and decision aids can enable a more rational design process.

Lunch Break

12:00 PM - 1:10 PM

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2014 Southwest Onsite Wastewater Conference

CONFERENCE SESSIONS

WEDNESDAY, JANUARY 29, 2014

How to Effectively Use Onsite Treatment Approaches for High Strength Wastewater **1:10 PM - 2:00 PM**

*Jim Bell, Executive Vice President
Bio-Microbics, Inc., Shawnee, Kansas*

This presentation will explain the differences between residential wastewater and high strength wastewater. It will show why systems sized solely on flow, which do not take into account the strength of the wastewater, will eventually fail. Examples will be given of typical wastewater strengths from various high strength wastewater sources. Example sizing will be presented for a typical restaurant, strip mall and school to provide training for proper sizing for these wastewater sources. Methods will be given so that regulators can quickly determine if the treatment systems have been properly sized to help prevent premature failures.

The Next Generation Approach to Decentralized Cluster Systems **2:00 PM - 2:50 PM**

*Terry Bounds, P.E.
Orenco Systems, Inc., Sutherlin, Oregon*

Decentralized wastewater systems may range from individual onsite systems to communities with individual onsite units, to communities with complete cluster systems. A few Onsite and Decentralized technologies have become well noted for their ability to reliably and affordably treat septic tank effluent to advanced wastewater treatment standards (AWT) or better. Decentralized concepts continue to offer manageable systems with considerably less environmental impact than centralized sewers. While many communities still have not taken advantage of the many Decentralized benefits, the mechanisms for managing decentralized and onsite systems have progressed and are slowly being put into full operation. Implementing onsite management programs is allowing communities to benefit from decentralized technologies and meet their needs for permanent, environmentally sound and advanced wastewater treatment. Decentralized and Onsite systems are being integrated into large scale existing communities with poor, failing, or overloaded centralized gravity sewers, or where water reuse is essential. Case studies are helping to establish significant step towards demonstrating the viability of decentralized and onsite systems.

Conference Session Break **2:50 PM - 3:20 PM**

Visit over 20 exhibitors

What Indicator to Use? **3:20 PM - 4:10 PM**

*Jean E. McLain, Ph.D.
Assoc. Director, Water Resources Research Center, Assoc. Research Scientist, Soil, Water and Environmental Science, University of Arizona*

Designation of an indicator organism to use to assess the effectiveness of onsite wastewater treatment technologies is a critical decision for regulators. This presentation will show how many of the "indicator" bacteria that are currently being used to assess fecal contamination are not specific to humans and (in fact) some of these bacteria are now being shown to thrive (grow and multiply) in soils. What this information does, in effect, is muddy the question of "what indicator to use" but it is super interesting to those of us who are trying to develop methods to assess soil quality. Researchers, regulators and equipment manufacturers will be challenged to collaborate to achieve a consensus.

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WEDNESDAY, JANUARY 29, 2014

Ag Extension: Leading Change in Onsite Wastewater

4:10 PM - 5:00 PM

Kitt Farrell-Poe, Ph.D.

Professor, Agricultural and Biosystems Engineering Dept., University of Arizona

From its inception in 2000, the University of Arizona's onsite wastewater education program exemplified the concept of Extension: "integrated teaching, issue-driven research, and creative activity for engaged outreach that ultimately leads to a change in behaviors of conditions." The objectives of the program are to empower onsite wastewater owners, practitioners and regulators to make wise, informed decisions. The Presentation will cover the Program's history, noting progress, and successes. The presentation will include an interactive demonstration of audience response tools to gather feedback.

Welcome Mixer

5:00 PM - 6:30 PM

Enjoy snacks while you visit with exhibitors, speakers and colleagues

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THURSDAY

2014 Southwest Onsite Wastewater Conference

CONFERENCE SESSIONS

THURSDAY, JANUARY 30, 2014

Registration

7:00 AM - 8:00 AM

Onsite Wastewater Reuse—Challenging Regulatory Issues

8:00 AM - 8:50 AM

Robert Rubin, Ph.D., Professor Emeritus
North Carolina State University

Increasing concern for scarcity of water supplies is forcing water management professionals at all levels to examine alternative sources for water. One readily available source of supply is wastewater; and wastewater may be combined whole house waste or simply the graywater. Other sources include harvested rainwater, cooling water, or stormwater. Regardless, aggressive management efforts and inter departmental cooperation will be necessary at all levels of government and in the community to assure alternative sources of water are properly managed. This will require cooperation from health officials, environmental officials, builders and developers, building code enforcement professionals, plumbers and plumbing inspectors, local elected and appointed officials and the general public. Recent changes in plumbing code and USGBC requirements will necessitate continued examination of water use options and alternatives. This paper will discuss:

- Executive Orders and USGBC requirements for water and energy efficiency
- Plumbing code standards for water use
- NSF 350 standards applicable to water management
- Examples of distributed reuse in urban and rural settings

The Impact of Wastewater (Treated or Untreated) on the Development of Antibiotic Resistance in the Environment

8:50 AM - 9:40 AM

Channah Rock, Ph.D., Assoc. Professor
Water Quality Extension Specialist, Department of Soil, Water and Environmental Science, University of Arizona

As the adoption of recycled water becomes more widespread, and as the public comes into contact with recycled water at a higher frequency, there will be increased pressure for utilities and other water managers to better understand microbial populations that could pose a risk to the public. The primary goal of this research was to focus on operational conditions during biological treatment, since these processes may pose the greatest risk for the development of antibiotic resistant (AR) microorganisms. By monitoring several locations within the wastewater treatment (WWT) train, the project team was able to characterize the impact of WWT on AR prevalence and, in turn, to depict the downstream impacts of recycled water on end-users and the environment. Ultimately, this study will provide new knowledge and tools for treatment process optimization and AR mitigation.

Conference Session Break

9:40 AM - 10:10 AM

Visit over 20 exhibitors

Health-Based Targets for Design and Management of Onsite Systems

10:10 AM - 11:00 AM

Professor Nicholas Ashbolt
School of Public Health, University of Alberta, Edmonton, Alberta, Canada

Log-reduction targets for pathogens and management targets can be defined using quantitative microbial risk assessment. This process is now used in Australia and is being taken up within water safety plans internationally by WHO and the Province of Alberta, where Professor Ashbolt now works. The presentation also addresses the emerging issue that the role of environmental pathogens (such as Legionella) is as important to manage as is that of traditional fecal-based pathogens.

2014 Southwest Onsite Wastewater Conference

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THURSDAY, JANUARY 30, 2014

The NEWS (Nutrients, Energy, Water and Sustainability) Paradigm

11:00 AM - 11:50 AM

*Robert Rubin, Ph.D., Professor Emeritus
North Carolina State University*

The NEWS (Nutrients, Energy, Water and Sustainability) Paradigm is emerging in the literature as a necessary component for future projects. Achieving the goals of this model will require cooperation between entities of government at the local and state level. This paper will focus on the development of a water reuse effort where poor communication and coordination between entities of local government failed to communicate. The case study model is intended to demonstrate the need for continued and coordinated communication between community leaders with visions of sustainability, permitting agencies responsible for water management, consultants charged with design, building code officials, and builders.

Lunch Break

11:50 AM - 1:00 PM

Visit over 20 exhibitors

Leveraging the Building Department for Onsite Wastewater Regulation

1:00 PM - 1:50 PM

*Steve Mauk, Director of Development Services
Yavapai County, Prescott, Arizona*

Yavapai County has included language in the Planning and Zoning Ordinance and adopted Building Codes to allow enforcement of malfunctioning onsite wastewater systems. This system uses a local hearing officer process to effect compliance. This process allows for an expedited hearing process over the ADEQ process, rapid enforcement and resolution of the situation. A program has been set up to provide training for real estate agents regarding permitting issues. The real estate training has been successful in reducing adversarial situations and creating a beneficial working relationship between the real estate community and the county wastewater officials.

Session Break

1:50 PM - 2:20 PM

Visit over 20 exhibitors

Water Reuse: Onsite Applications

2:20 PM - 3:10 PM

*Jim Bell, Executive Vice President
Bio-Microbics, Inc., Shawnee, Kansas*

Water reuse has been used for many years as municipal treatment facilities have treated wastewater to water reuse quality and pumped the reuse water back into the community. Little work has been done to address how water reuse can be accomplished onsite to eliminate the transfer of reuse water. This presentation will cover the new ANSI/NSF Standard 350 for water reuse and how it can be used to certify products for onsite water reuse. It will also cover how the 2012 International Green Construction Code incorporates Standard 350 and how this will advance into the future ICC building codes. The presenter will also provide information on the first technology to be certified under ANSI/NSF Standard 350 and how this technology can be incorporated into a typical onsite wastewater treatment system.

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THURSDAY, JANUARY 30, 2014

Mud River West Virginia Decentralized Wastewater Advanced Treatment and Disinfection Demonstration

3:10 PM - 4:00 PM

Jim Cruver, Ph.D., President, Salcor Inc. / Charles Ray, Mgr. Environmental North America, Anua

Improperly treated sewage from low-income homes in West Virginia has caused severe pollution of the Mud River tributaries. From 2005 through 2010, enabled by support of the EPA, WV DEP, and the Lincoln County Commission, forty homes received new onsite wastewater treatment systems. Twenty systems, from multiple suppliers, were installed in the first phase. The project installed 71 Anua peat filters plus Salcor 3G UV disinfection systems in 2011-2013 (Phases II-IV). Phase V began in late 2013. Each treatment system discharges directly into a stream and has a NPDES permit. Sampling of the treatment system performance and receiving water quality showed a dramatic reduction in tributary water E-coli count. The project's extraordinary maintenance and trouble-shooting activity, and excellent treatment system performance will be presented and discussed.

Conference Ends

4:00 PM

Pick up continuing education certificates

THE ARIZONA COUNTY DIRECTORS OF ENVIRONMENTAL HEALTH SERVICES ASSOCIATION (ACDEHSA)

Thank you for attending the 2014
Southwest Onsite Wastewater
Conference.

Special thanks goes to all of our
speakers and exhibitors, whose
participation helped make this year's
conference a success.

Please mark your calendar to
join us again on January 27th & 28th,
in 2016.

For upcoming events visit us at:
www.southwestconference.net

