



UPCOMING MEETING:

SURF 31 – March 2-3, 2016

Parsons, Pasadena, California

Registration and details for SURF 31 will be available on the SURF website: www.sustainableremediation.org

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SURF REPORT – FALL 2015

CHALLENGES OF THE WATER-ENERGY NEXUS

At SURF 30, Pedro Alvarez (Rice University) presented a vision of how nanotechnology can help enhance sustainability and address the challenges of the water-energy nexus. As background, Pedro provided seven “grand challenges” related to water:

- 1. Safe water for a growing population**
- 2. Water infrastructure (distribution and collection)**
- 3. Water distribution between humans and ecosystems**
- 4. Water-induced disasters and flood protection**
- 5. Enough food for all**
- 6. Water to produce energy**
- 7. Solution for water conflicts and fair water share for all**

“With great power comes great responsibility.”

- Uncle Ben, Spider Man, 2002

These challenges create the current competition for water and magnify the need to change the status quo. Current statistics also demonstrate the need for change. Over 20% of energy use in cities is for moving water, and over 55% of the cost of desalination and wastewater reuse is energy related. Pedro believes that nanotechnology has great potential to enable exploitation of a broader range of water sources (e.g., sea water, wastewater). Current treatment approaches that rely heavily on infrastructure, chemicals, and energy could be transformed toward catalytic and physical systems to eliminate the current tradeoffs between cost and performance and between energy consumption and treatment rate.



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Paul Favara, CH2MHILL
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Contact chairs for volunteer opportunities!

ABOUT SURF

The Sustainable Remediation Forum (SURF) promotes site assessment and remediation that protects human health and the environment while maximizing environmental, social, and economic benefits throughout the project life cycle by:

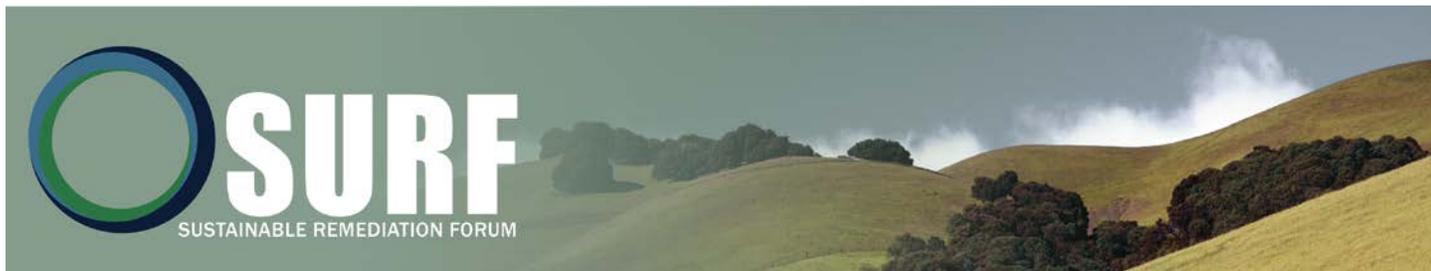
- Advancing the science and application of sustainable remediation
- Developing best practices
- Exchanging professional knowledge
- Providing education and outreach

Greetings from SURF! This newsletter is published quarterly by the SURF Communications Committee to provide you with highlights of SURF's activities and opportunities and developments in the field of sustainable remediation.

The SURF website, www.sustainableremediation.org, continues to be our primary resource for sharing the latest and greatest news about SURF and sustainable remediation. Our Online Resources page provides a one-stop shop for resources, tools, information, and documents. The Calendar shows remediation, sustainability, and related conferences, as well as deadlines for submitting abstracts. Suggestions for additions and improvements are welcome by using the Contact SURF form on the website or by emailing administrator@sustainableremediation.org.

IN THIS ISSUE:

- Challenges of the Water-Energy Nexus
- 2016 Elections Coming Soon!
- Case Study Initiative Update
- Wanted: SURF Partners for Technology Case Study
- Save the Date for SURF 31
- SURF 29 Webinar Recap
- Upcoming Events and Conferences



Water-Energy Nexus (Continued from Page 1)

The general idea behind using engineered nanomaterials in water treatment and reuse is to match treated water quality to the intended use and rely more on physical and catalytic processes to lower chemical consumption and/or electrical energy requirements. Pedro described how engineered nanomaterials can be applied using a modular approach for low-energy desalination via direct solar membrane distillation, electrosorption for scaling control, photodisinfection and advanced oxidation, and select contaminant removal via multifunctional nanosorbents. Pedro acknowledged the potential impacts that engineered nanomaterials may have on the environment. He quoted Uncle Ben in Spider Man, saying “With great power comes great responsibility.” While risk is generally addressed by focusing on the hazard or exposure, Pedro proposed focusing on safe materials (e.g., food additives) and exposure by immobilizing nanomaterials so as to prevent exposure. Specific actions were recommended to promote the safer use of engineered nanomaterials and are included in his presentation slides.

After the presentation, the majority of the discussion focused on the safety and impacts of nanoparticles. Pedro responded by saying there are two principles at work: the precautionary principle and “innocent until proven guilty.” He believes if we err too much on the side of being careful, we will miss an opportunity. On the other hand, if we are too permissive, we will do real harm. He encouraged participants to be cautiously optimistic and careful, but not afraid. He recommended moving forward with research on both tracks—



2016 ELECTIONS COMING SOON!

SURF is now accepting nominations for 2016 Board of Trustees positions:

- President
- Vice President
- Treasurer
- Secretary
- Two At-Large Positions

Nominations for these positions will be accepted until midnight December 25, 2015. Elections will be held in January 2016.

Members in good standing are eligible to nominate other members (or themselves!) for open positions and vote in the upcoming election. To nominate someone, log in as a member on the SURF website and select “Nominations: 2016 Board of Trustees” under “Member Resources” or click [here](#) (login required).

continuing to develop engineered nanomaterials and valuable applications and also continuing to determine the impacts of these materials through molecular analysis and modeling. As professionals, Pedro believes we need to be honest brokers by making sure decision makers are informed and then use market forces to make intelligent choices.

Pedro’s presentation is available to SURF members by logging into the SURF website, clicking “member resources,” selecting “presentations,” and clicking the “SURF 30 Presentations” folder.

CASE STUDY INITIATIVE UPDATE

Over the last several years, remediation practitioners have voiced a need for documented, peer-reviewed, technically sound concepts and examples of sustainable remediation. To meet this need, SURF established the Case Study Initiative (CSI), led by SURF member John Simon (Gnarus Advisors). In 2014, the CSI Team reviewed case study templates from other sustainable remediation organizations and initiatives, including SuRF-UK and NICOLE, and developed a concise, easy to follow template that captured key project elements while summarizing the sustainability strategies and benefits employed by the project team.

To date, the team has collected and reviewed 14 case studies submitted by SURF members and participants, including a few that followed the ASTM Standard Guide for Greener Cleanups (E2893-13) and were concurrently submitted for publication on the ASTM E50 Committee website [here](#). The case studies identify innovative approaches to remediation projects and highlight how specific environmental, economic, and social objectives were achieved. The case studies (and template) are available on the SURF website [here](#) (click “Library,” “Case Studies,” “Case Study Initiative Database”). Seven additional case studies are currently under review and will be posted on the website when final.

Do you have a project that highlights a sustainable remediation strategy or achievement of triple bottom line objectives? Submit a case study using the template and email it to the CSI Team (csi@sustainableremediation.org).

THANK YOU TO SURF'S SPONSORS!

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Silver

AECOM • Amec Foster Wheeler • CDM Smith
Haley & Aldrich • Langan Engineering • Terra Systems

Bronze

Envirocon • ExxonMobil • Tetra Tech

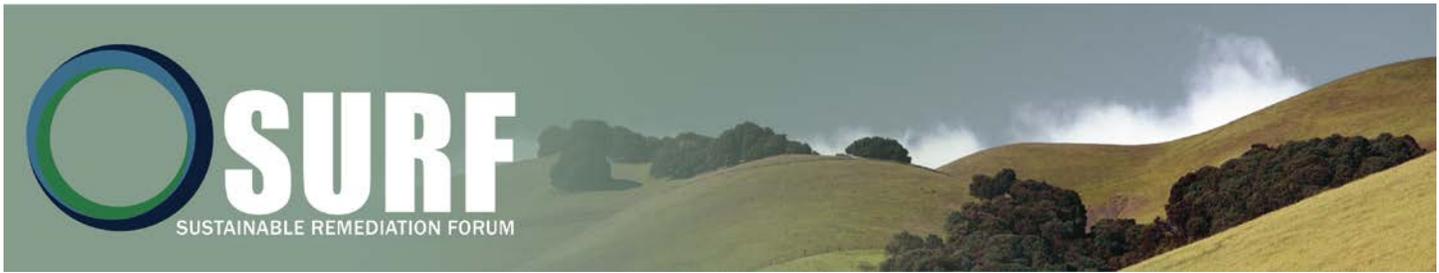
WANTED: SURF PARTNERS FOR TECHNOLOGY CASE STUDY

A Brazilian company, Ambievo, has developed a new bioremediation technology that recovers hydrocarbons from contaminated soil. Ambievo is looking for U.S. SURF partners who are interested in learning more about this new technology and are willing to help them complete a SURF case study.

RECOY® operates as an ex situ, on-site, ambient temperature, closed-loop process. The technology has the following sustainability benefits:

- The solvent is derived from orange peels and pine. It is a 100% natural, renewable source with biodegradation higher than 95% in 15 days, resulting in a low environmental impact based on the OECD (Organisation for Economic Cooperation and Development) standard.

Continued on Page 5



Wanted: SURF Partners (Continued from Page 4)

- On-site processing eliminates the need for transporting soil to an off-site treatment plant, which reduces the carbon footprint and eliminates the risk of a spill during transportation.
- The process is effective at ambient temperatures, eliminating the energy requirement vs. high temperature thermal process alternatives.
- The closed-loop process uses recirculation to significantly reduce the generation of effluents (which require further energy to treat) vs. conventional treatment processes.
- The RECOY® solvent is fully recovered (except for sloshing or evaporation) at the end of the process and reused.

This process is commercial in Brazil. Treatment rates range from 5 to 20 tons/hour depending on the size of the soil particles and the level of contamination. Treatment costs are less than the commercially available thermal alternatives.

The technology received a Green Chemistry 2015 Innovator of the Year award from the LAUNCH Forum (founders NASA, Nike, the U.S. Agency for International Development and the U.S. Department of State) earlier this year. The company is eager to bring the technology into the U.S. market and hopes that SURF can help.

Contact Terry Preskar, AMBIEVO USA, via email (terry.preskar@gmail.com) if you would like to learn more

about RECOY® or are interested in collaborating for a case study.

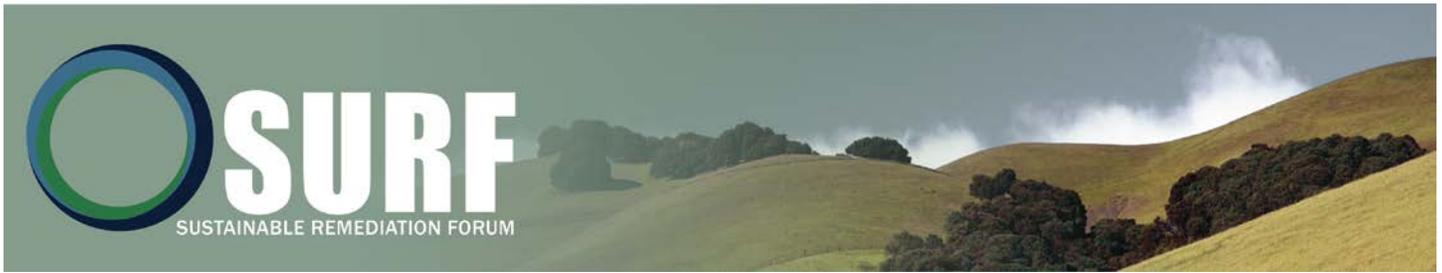


SAVE THE DATE FOR SURF 31

SURF 31, "Climate Change, Resilience, and Remediation," will be held from March 2-3, 2016 at Parsons' headquarters in Pasadena, California. Presentations and a panel discussion will include the following topics:

- Topics exploring climate change impacts on remediation projects
- Integration of climate change adaptation and resiliency plans into remediation
- Resiliency tools or applied case studies
- Case studies from other industries

Visit the SURF website for the latest information on the meeting, including the call for abstracts, agenda, and logistical information.



SURF 29 WEBINAR RECAP

On July 14, 2015, SURF members remotely attended SURF's annual webinar. SURF 29 included presentations related to how green and sustainable remediation methods can be used to achieve site closure and how different companies are implementing sustainable remediation programs.

After welcoming participants, Maile Smith (SURF President) kicked off the webinar by urging participants to continue to be introspective—to document and dissect remediation practices, while at the same time innovate, share findings with others, and develop and implement robust standards for sustainable remediation. Webinar presentations seemed to follow that spirit of innovation and sharing.

- Sheri Knox (Amec Foster Wheeler) spoke about three case studies where collaborative greener remediation plans were implemented to reduce cleanup timeframes from 13-20 years to 1-5 years. The green remediation plans that were implemented included advanced groundwater modeling, enhanced bioremediation, and in situ source treatment with monitored natural attenuation, all of which in turn saved time, money, and energy. What were the lessons learned? Always evaluate the plan, engage stakeholders, and consider the current business climate by evaluating short- and long-term goals.
- Carol Lee Dona and Josh Van Bogaert (USACE) presented the details of the USACE's document titled Detailed Approach for Performing Green

and Sustainable Remediation Evaluations in Army Environmental Remediation. Use of the USACE green and sustainable policy within contracts has shown that incentives increase green and sustainable remediation quality and implementation, and dollar reductions and visible benefits are possible and must be shown.

- Geraldine Barnuevo (GM) discussed how GM has built its sustainability program around customer service. Green best management practices were implemented through a pilot study and metrics (e.g., energy use, materials, waste) were evaluated to assess program performance. With the information acquired, GM created a guidance application that was shown to be a consistent approach for implementing sustainability.

In addition to these presentations, Jonathon Weier (CH2M) emphasized the importance of including ecosystem services in the remedial decision-making process. Optimizing the net environmental benefit – the change in ecosystem services between the pre- and post-remediation landscape – is often not considered in remediation decision making. (Ecosystem services can be defined as the benefits that people gain from natural resources.) In his presentation, Jonathon explained the options available to address ecosystem service changes; reminded participants that contamination impairs

Continued on Page 7



SURF 29 Webinar Recap (Continued from Page 6)

and remediation influences ecosystem services; and demonstrated the importance of the relationships between cost, risk, and net environmental benefit. Three examples were presented to show how changes to ecosystem services can be quantified over time.

Participants' questions showed that the topic of sustainable remediation is still piquing interest.

Contributed by Emerald Erikson and Kathy Adams

Detailed meeting notes are available to SURF members on the SURF website (log in, click "Member Resources," "SURF Meeting Minutes").

GET SOCIAL WITH SURF!

 Search LinkedIn for
"Sustainable
Remediation Forum"
to join


@SR_Forum

UPCOMING EVENTS AND CONFERENCES

Annual Waste Management 2016 Conference, March 6-10, 2016, Phoenix Convention Center, Phoenix, Arizona

This annual conference, presented by Waste Management Symposia (WMS), is regarded as the premier international conference for the management of radioactive material and related topics. WMS is a nonprofit organization founded to provide a forum for discussing and seeking cost-effective and environmentally responsible solutions for the safe management and disposition of radioactive waste and radioactive materials. Click [here](#) for more information.

4th International Conference on Sustainable Remediation (SustRem) – April 26-28, 2016 – Le Centre Sheraton Montreal, Montreal, Quebec, Canada

This conference builds on the successes of the first three SustRem events and brings participants and speakers to North America for the first time. The conference aims to stimulate international exchange by providing a venue for where professionals and interested parties can share experiences and perspectives on how contaminated sites can be remediated with a lower environmental footprint and how site reuse can contribute to more sustainable land development. For more information and registration materials, click [here](#).

The 10th International Conference on Remediation of Chlorinated and Recalcitrant Compounds – May 23-26, 2016 – Palm Springs Convention Center, Palm Springs, California

This conference is the world's largest and most comprehensive meeting on the application of technologies and approaches for characterization, monitoring and management of chlorinated and complex sites. This year the conference will be held in Palm Springs because the Monterey Conference Center building will be undergoing a complete renovation during the conference time period. Click [here](#) for more information.

PLEASE NOTE:

There are too many events and conferences to list here. For a complete list of upcoming environmental and remediation events, please view the SURF calendar [here](#).



NEWSLETTER SUBMITTALS:

Deadline is the 15th of March, June, September, and December for the following quarterly issue. Contact the Newsletter Editor by email for submittal:

Gerlinde Wolf, AECOM
newsletter@sustainableremediation.org

Submittals are subject to editing for space considerations.

Address Changes

Please submit to the SURF Secretary at secretary@sustainableremediation.org.

Circulation

The newsletter is circulated to about 500 individuals directly and is posted online at www.sustainableremediation.org.

Sponsorship

Sponsorship is a great way to demonstrate to your communities, clients, employees, or shareholders that you are committed to advancing the science and application of sustainable remediation.

As an appreciation for sponsorship:

- Your company or organization will receive complimentary SURF memberships and meeting registrations
- Your company's or organization's name will be displayed on the SURF website and hyperlinked to your webpage
- Your company's or organization's name will be displayed in the SURF newsletter and announced during SURF events
- Your company or organization may use the SURF Sponsor logo

To inquire about sponsorship options, contact:
membership@sustainableremediation.org.

SURF MEMBERSHIP

Join SURF or Renew your Membership TODAY!

SURF provides great value to our members, the public, and the practice of remediation. We do this by supporting:

- Alignment with organizational sustainability goals
- Environmental footprint reduction
- Social responsibility and public outreach
- Reduced remediation costs and long-term liabilities
- Innovative thinking, research, and real world application
- Peer benchmarking (domestic and international)
- Access to leading-edge case studies
- Opportunities to collaborate on publications
- Networking and access to subject matter experts
- Academic outreach and mentoring

By joining SURF, you establish partnerships and build relationships with a wide variety of remediation stakeholders: industry and agency peers, customers, clients, academia, technology vendors, and the public. Our website, meetings, and communications provide a clearinghouse and source for the latest information about policy, case studies, best practices, and educational opportunities.

As a member, you have the opportunity to participate in SURF's Technical Initiatives. SURF has published several groundbreaking guidance documents, and recent or current initiatives include examining more sustainable practices for water use and reuse, compiling sustainable remediation case studies, assessing the social aspects of sustainable remediation, and exploring the viability of a sustainable remediation site rating and professional certification system.

SURF has several membership levels based on an individual's qualifications: Regular Member (dues are \$150 annually for new members and \$140 for renewing members), Government Member (dues are \$50 annually), and Student Member (dues are \$25 annually).

The term for all classes of Members is February 1 through January 31 of the following year.

Learn more and apply for membership [here](#).