CEHA Bulletin

California Environmental Health Association | Volume 5, Issue 2 | Summer, 2006

Inside This Issue

Discussion Topics:

Excerpts from the 55th AES in Anaheim

(The following Articles are based on presentations from the AES)

Regular Features:

Special Additions:

55th AES: Dynamic Challenges – Fruitful Endeavors

By Dianne Martinez, AES General Co-Chair

The Citrus Chapter was very pleased to have had the opportunity to host CEHA's 55th Annual Educational Symposium, which was held at the Crown Plaza Resort from May 10 through 12, 2006. Dynamic Challenges – Fruitful Endeavors was chosen as the theme to this year's symposium to highlight the ever-shifting challenges that we face as Environmental Health Specialists, and to point out the rewards that are gained as we broaden our experiences and sharpen our abilities. In all that we do in our professional roles, we strive for positive, fruitful achievements!

The Crown Plaza turned out to be a terrific venue for the event. It is beautifully appointed in a distinctive California-Spanish style architecture, and is equipped with over 28,000 square feet of meeting and banquet space that comfortably accommodated the symposium's registration, general session, technical breakout sessions, exhibit booths, meals, and entertainment needs. To top that off, it was only one mile south of the Disneyland Resort!

As you know, we start off each AES with pre-conference sessions. This year's events included many talented professionals who provided training. Monday's sessions included The National Registry of Food Safety Professionals' Food Certification course, Back Flow: The Basics, and the Certified Pool Operator's course (CPO). The two-day Certified Pool Operator course (given by Bob Buettner) of Leslie Pools was the most popular pre-conference event. Bob did a great job! We were also fortunate to be able to offer the newly updated version of the NEHA exam. Thanks, to all our pre-conference instructors!

Pre-conference activities continued on Tuesday with a Hazwoper Refresher Course and technical tours. The wholesale food technical tour included a tour of House Foods, an 80,000 square foot high-tech tofu manufacturer. Attendees were cleaned of loose debris via an "air shower" upon entering the plant. Tour attendees were amazed by an incredible variety of delicious tofu foods. Tour participants were then treated to a tour of South Coast Seafood, a 15,000 square foot processor of fresh fish. Attendees of the Taormina Solid Waste and Recycling Facility toured and reviewed the operations of one of the largest transfer stations in the nation. A behind-the-scenes tour of Disneyland Resort was a preconference highlight. Attendees were treated to a rare look at various environmental health functions in the park including air pollution control during the fireworks launch, animal farm controls, and water treatment for the water rides. Special thanks to Todd Frantz for providing this rare opportunity.

Continued on page 4

CEHA Board of Directors

Darryl Wong
President
dwongrehs@yahoo.com

George Nakamura
President-Elect
gmlnaka@comcast.net

Tracy Ford-Rossler
Vice President
tford@co.riverside.ca.us

Parvaneh Byrth
Treasurer
pbyrth@co.riverside.ca.us

Mike Wetzel
Secretary
mwetzel@dph.sbcounty.gov

Melissa St. John-Harder
Immediate Past President
Melissa@califenvhealth.us

Ann Marie Velazquez
Central Chapter President
annievelazque@comcast.net

Vacant
Central Chapter President-Elect

H. Taren Tseng
Citrus Chapter President
htseng@ochca.com

Paula Harold
Citrus Chapter President-Elect

Deborah Smith-Cooke
Mission Chapter President
dsmithco@co.slo.ca.us

Graciela Garcia
Mission Chapter President-Elect
Graciela.garcia@ventura.org

Mamerto Jorvina
Northern Chapter President
Mamerto.jorvina@deh.sccgov.org

Richard Harrison
Northern Chapter President-Elect
Rich5559_98@yahoo.com

Laura Barnthouse
Redwood Chapter President
ibarntho@sonoma-county.org

Greg Prie
Redwood Chapter President-Elect

David LeDuff
Southern Chapter President
dleduff@ci.vernon.ca.us

Vacant
Southern Chapter President-Elect

Darryl Yorkey
Southwest Chapter President
Darrylyo2@cox.net

Ricardo Encarnacion
Southwest Chapter President-Elect
Ricardo.encarnacion@sdcounty.ca.gov

Sophia Jella
Superior Chapter President
Jellas@saccounty.net

Zurha Ruiz
Superior Chapter President-Elect
ruizz@saccounty.net

Non-Voting Board Members

Alicia Enriquez
NEHA Regional Vice President
EnriquezA@SacCounty.net

Margaret Blood
California Department of Health Services
REHS Program Coordinator
mblood@dhs.ca.gov

CEHA Support Services

John Morihara
110 South Fairfax Avenue, #A11-175
Los Angeles, California, 90036
(323) 634-7698 Phone
(323) 571-1889 Fax
support@ceha.org
www.ceha.org

Design/Printing

Concord Graphic Arts
3270 Monument Way
Concord, CA 94518
(925) 682-9670

CEHA Mission Statement

The California Environmental Health Association is a nonprofit, professional organization dedicated to improving the quality of life and health through environmental education and protection.

CEHA Publications Committee

Kathy Hartman, Coordinator/Editor
Khartma2@yahoo.com

Keith Winkler
Central Chapter

Vacant
Citrus Chapter

Vacant
Mission Chapter

Brian Hoy
Redwood Chapter

Vacant
Southern Chapter

Julie DeGraw
Heather Stachelrodt
Southwest Chapter

Adam Rocke
Past President's Council

Margaret Blood
DHS Representative

Sandi Donahue
Fresno State University

If you are interested in serving as a member of the CEHA Bulletin Editorial Committee, please contact the Coordinator/Editor, Kathy Hartman, at khartma2@yahoo.com or (858) 792-1630

The CEHA Bulletin is the official publication of the California Environmental Health Association. For association members, subscriptions are included in membership dues. Some articles may represent the opinion of the author and not CEHA's official position. CEHA does not specifically endorse the products and services of any of its advertisers. Articles may be reprinted with permission of CEHA and contributing author(s) only.

President's Message

Darryl C.F. Wong, REHS
2006-2007
CEHA President

Dear CEHA Members:

Thank you. I am deeply honored by your support in electing me to be your 2006-2007 CEHA President. I remember several years ago talking with Ron Torres, the CEHA President then, about my becoming a Southern Chapter board member. Ron had made a sly joke about me being elected to the State level. We had a good laugh after I told him I wasn't that crazy. Well, I can only say now that I'm very proud to be a member of CEHA and that I will do my best to lead CEHA with honesty, integrity, and honor.

Although newer to the association, I assure you that I have been well prepared to be the CEHA President. I wouldn't be here without the help from three very special friends and previous, as well as current, officers of CEHA. Whoever said that behind every great man is a great woman was totally wrong. Not that I am saying I'm a great person, but I say this because there were three great women before me. They taught me what CEHA was all about; how to provide leadership, dedication, commitment; and how to stay out of trouble. Well, they tried to teach me how to stay out of trouble. I'd like to take a moment to thank Akiko Tagawa, Vickie Sandoval, and Melissa St. John.

First, I want to thank Ms. Tagawa, 2003-2004 Southern Chapter President, for encouraging me to become more involved in CEHA. While I was a board member of the Southern Chapter, I tried to make myself as small as possible so as not to have to do too much. This was impossible as Akiko is much smaller than me. With her pending ascension to become the Southern Chapter President, she encouraged me to run for Chapter President Elect. I was honored that she would consider me for such an important position. That was also the year the Southern Chapter hosted the 2004 AES (now I know why she wanted me to be the Chapter President Elect). It was a trying experience and I saw how Akiko took charge of a group of people with little or no experience and put on one of CEHA's most important events of the year. I learned much from her as to what it takes to be a leader.

Next, I want to thank Ms. Sandoval, 2004-2005 CEHA President, for teaching me the meaning of dedication. All of the CEHA officers that I have had the privilege to serve with have been dedicated members. You don't do this unless you're willing to sacrifice your own personal time and energy. Vickie takes dedication to a degree beyond expectations. Her drive to make CEHA successful was exemplary. I don't know of many members who are up at 3 in the morning doing CEHA work. Every day there would be multiple messages from Vickie on items that needed to be completed or looked into. I then realized the dedication that it takes to be the CEHA President. Vickie is a great asset to CEHA.

Lastly, I want to thank Ms. St. John-Harder, 2005-2006 CEHA President, for teaching me the meaning of commitment. Being the CEHA President is an immense responsibility. The CEHA President is the focal point of this association. There are many decisions that must be made and all of them go through the president. Some decisions are not easy and can be controversial.

Melissa brought Kurtis Ray Harder into this world on October 11, 2005. Despite Melissa's added responsibility to her new son, her family, as well as a new job, she continued to oversee CEHA's needs. Regardless of being a new mother, she never forgot about her duties to CEHA. Having worked on a maternity ward, I can tell you that I have the utmost respect for Melissa's ability to maintain her role as mother, wife, Environmental Health Specialist and CEHA President. I could not do what Melissa has done and am glad that I cannot get pregnant!

As your president, I promise you that I will do my best to ensure that the Bylaws of CEHA are upheld by the 2006-2007 Executive Committee and Board of Directors, in whom you have placed your trust. I will do my best to increase membership. I will do my best to promote CEHA. I will do my best to ensure CEHA remains a viable association that will provide our profession with the highest quality of services.

Our profession faces several important and serious issues this coming year. Continuing Education and the REHS are two of the main items that CEHA is currently working on. Yes, I am aware that both are very "hot" topics among us and have heard many opinions on each subject. I do understand everyone's concern and can appreciate your needs as an Environmental Health Specialist. But, we must look at the future of our profession and what needs to be done to preserve it.

CEHA is and has been in support of continuing education. A letter in support of continuing education has been sent to the California State Department of Health Services (DHS) in order to keep the legislative process going. CEHA's Mission Statement states, "Dedicated to improving the quality of life and health through environmental education and protection". It is up to us as professionals to maintain our profession at the highest degree and quality possible and continue to improve the quality of life and health of all Californians. It is our duty to ensure that our abilities meet or exceed the highest standards in order to better protect and serve the communities we call home. We cannot do this if we do not keep pace with the ever changing world of information. CEHA is looking into alternative and innovative methods to provide its membership access to continuing education credits at minimal costs and loss of office time.

While there is still much debate about our registration with DHS, CEHA firmly feels that this issue is vital to our profession and its survival. It is extremely important you fully understand what our current registration means to our profession, our future, and our lives. I ask that you encourage your associates and peers to look closely at what the California Registration means to our profession and what it entitles us to do. Do not jump to conclusions without knowing all the facts. Again, contact you local board representatives and discuss the issues. Get involved!

CEHA also supports the reorganization of the Department of Health Services into a new Department of Public Health (DPH). We believe that strengthening the State's support for and the professional profile of the Registered Environmental Health Specialists in a new DPH will reinforce the key role environmental health plays in public health protection. Contact your Chapter representatives and let them know what you think or if you have questions. We are here to serve you.

Continued on page 11.

55th AES, Continued from cover

The AES officially began with the Exhibitor reception sponsored by **Garrison Enterprises** and the initiation of the Silent Auction. Attendees enjoyed delicious finger foods and enthusiastically greeted the many exhibitors. The silent auction, which earns funds for CEHA scholarships, was a great success.

Marti McGrath-Gregg and Marcella Gelman

The AES had an amazing turnout of exhibitors presenting a wide variety of useful products and services. CEHA Corporate Sponsors were permitted to present 10-minute "What Is New" (W-I-N) presentations, which were tailored to the Environmental Health Specialist's interest. This year's W-I-N presentations were standing room only. Wednesday night's exhibitor social was a wine and cheese tasting gala sponsored by **Western Exterminator.**

Decade Software Company brought a special celebrity guest, Marilyn Monroe who regaled the crowd with her beauty and charm. The social was a big hit with everyone!

"Marilyn" with Bill Hartman

The opening General Session on Wednesday was highlighted by the keynote address from Dr. Kevin Reilly, Deputy Director for Prevention Services from the Department of Health Services. Dr. Reilly spoke about the many activities in the Environmental Health Protection Program within the Department of Health Services. Welcoming remarks also included Andrea Smith, CEHA's special guest and delegate from the North Western Center, UK; CEHA President, Melissa St. John-Harder; CCDEH President, Lawrence Dwoskin; NEHA President, Ron Grimes; and Orange County Environmental Health Director, Steven Wong.

Kevin Reilly, DVM, MPVM

Diane Eastman, Doug Turner, and Andrea Smith, Lancaster Delegate

This year's AES held the first Student Forum in many years and it was a huge success. There were excellent speakers from the public, private and military sectors as well as rural and metropolitan settings.

The Program Committee did a great job of offering a wide variety of timely and popular topics in addition to well-liked speakers. There were so many technical beak-out sessions each day it was hard to pick which sessions to attend. One session overflowed so much that the wall panels had to be removed so that attendees could spill out into the banquet room! The ever-popular Bob Ash, well known in Orange County, for his dynamic interaction with the audience and his presentation of pertinent information, presented Fundamentals of Personnel Success for the closing session on Friday.

CEHA acknowledged our top professionals for outstanding achievements in the field of Environmental Health during the Awards Luncheon. Award recipients included John Ralls (Environmental Health Specialist of the Year), Kathy Hartman (Distinguished Service Award), and Robert Harrington (Mark C. Nottingham Award) who were recognized for their distinguished services and contributions. CEHA also presented scholarship awards to Keith

Melissa ST. John-Harder, 2005-2006 CEHA President

AES attendees waiting for the International session to begin

Allen (Charles Senn Scholarship) and Christina Leon (Martin Smilo Undergraduate Scholarship).

AES attendees

Western's Saguaro Cactus

Following a full day of intellectual stimulation, members had an opportunity to relax at the Annual Banquet. The Cinco de Mayo theme was highlighted by a Mexican Buffet and a beautiful ice sculpture of a saguaro cactus that was provided by Western Ice Association. Energetic dances of Guadalajara were presented by the professional and beautifully costumed dancers of Ballet Folklorico Raices. Dancers included Orange County's own Janice Garcia, Environmental Health Specialist.

Ballet Folklorio

The crowd was further wowed by Dr. Carl Winter and his repertoire of health translations of pop songs including "Lavate Las Manos" sung to the tune of "La Bamba" and "You Better Wash your Hands" better known as the Beatle's "I Wanna Hold your Hand." Dr. Winter, known as the Sinatra of Salmonella and the Elvis of E. coli, included some audience participation in the widely popular and ever-loved "YMCA" song, which became the "USDA" song. The audience roared, sang, clapped, and could not get enough of Dr. Winter. We then ended the night by tearing up the dance floor until midnight. The dance floor was never empty.

The number of attendees and the compliments received were phenomenal. Attendees praised everything from the quality of the food to the quality of speakers and the variety of topics that were offered. Organizers heard how smoothly the event ran and how well organized, fun, and professional it was. Many said it was the best AES they had ever attended. This AES appears to have broken attendance records. It made all the committee's hard work worth it and very satisfying. We were glad to have been able to provide the CEHA membership with a top-notch AES!

Carl Winter, PhD

The YMCA dance by: Bob Greenhaigh, Jessica Fortuna, Paul Clifford and friends

AES attendees waiting for Wednesday's general session to begin

The winners are in!

Each year CEHA acknowledges outstanding achievements in the field of Environmental Health by giving recognition and scholarships to deserving professionals and students.

This year, CEHA honors the following people:

Kathy Hartman,
Distinguished Service Award

Robert Harrington,
Mark C. Nottingham Award

Awards presented by Melissa St.John-Harder,
2005-2006 CEHA President

John Ralls,
Environmental Health
Specialist of the Year

Not Pictured
Christina Leon,
California State University,
San Bernardino,
2006 Martin Smilo
Undergraduate Scholarship

Keith Allen,
Charles Senn Scholarship

CEHA would like to recognize and thank the Citrus Chapter, the AES Committee, the generous Exhibitors and Sponsors, and all the dedicated volunteers who made the 2006 AES a success

BackRow : Karen New Morgan, Darryl Wong, Dianne Martinez, Keith Allen, Steve Nakauchi. Front Row: Mary Cartagena, Fritzy Ilano, Mozhgan Mofifi, Julie Hobberlin, Dawn Umemoto.

55th AES Committee

AES General Committee
Dianne Martinez, Co-Chair
Darryl Wong, Co-Chair

Exhibits
Steve Nakauchi, Co-Chair
Keith Allen, Co-Chair
Heather Buonomo
Donna Gurule
Dorothy Janse
Michele LeCavalier
Vickie Sandoval

Hotel Liaison
Karen Morgan Newe

Graphics
Camyar Dadashzadeh
Mozhgan Mofidi

Silent Auction
Rochelle Abramovitz

Pre-Conference
Tom Ahrens
Pearl Boelter
Fred Chung
Dean Clarke
Patti Henshaw
Antonio Islas
Jeff Lane

Program Committee
Tracy Ford-Rossler, Chair

Program Technical Chairs
Don Atkinson
Parvaneh Byrth
Vickie Church
Diane Eastman
Paul Fitzmaurice
Rochelle Gaddi
Virginia Huber
Elizabeth Huff
Dorothy Janse
Frank O'Sullivan
Steve Spence
Linda Spangler
Richard Wilson

Moderators
Brent Casey
Jenay Consaul
Ed Diaz
Mike Haller
Leila Abido-Judd
Rebecca Norwood
Martha Ramirez
Stephanie Singleton
Jean Marie Strey
Akiko Tagawa

Photography
Taren Tseng
Fred Chung

Local Arrangements
Mary Cartagena, Co-Chair
Fritzy Ilano, Co-Chair
Monica Cardenas
Fred Chung
Jenay Consaul
Miloni Devani
Jeff Eisert
Mike Haller
Benson Li
Jeff Lojeski
Jason Phillipi
Greg Reyes
Mike Wetzel

Promotions
Mozhgan Mofifi, Chair
Verona Borba
Corwin Brown
Susan Cabrera
Miloni Devani
Jessica Fortuna
Mike Haller
Jocelyn Iwasaki
Christine Lane
Charles Peters
Wida Rahimi
Taren Tseng
Christina Valdez

Entertainment
Carl Winter
Janice Garcia and
Dance troupe

Student Forum
Margaret Blood
Erika Aleman
Keith Allen
Michelle LeCavalier
June Livingston
Janice McBride
Taren Tseng

Awards
Matt Fore, Chair

Finance and Registration
Julie Hobberlin, Co-Chair
Dawn Umemoto, Co-Chair
Erika Aleman
Leila Abido-Judd
Pearl Boelter
Jenafer Forester
Nina Garcia
Mary Jin
Valerie Keneko
Michele LeCavalier
Joyce Lim
Royce Long
Janis McBride
Elaine Overman
Wendy Ocampo-Choy
Julie Sica
Marlissa Stewart
Shelley Wallevand
Jeff Warren

And Now, For Something Completely Different…

By John Ralls, REHS

Dull should not be on anyone's vocabulary list to be used when describing the programs of Environmental Health. Our workdays seem to be an endless procession of unexpected events that end up making our lives a little more interesting than we had ever hoped for. There was a time when our work seemed pretty straight forward, and solutions for most of the issues that arose between industry operators and regulatory agencies seemed to be plainly spelled out in the laws and policies for all to see. But after years filled with these challenges, we find that many of the issues can not be properly resolved using simple answers. There are times when a resolution requires a bit more effort on our part, when we need to look for an approach that may be completely different from what we have tried before.

Nowadays, it pays to be prepared to use any number of approaches in order to achieve compliance from operators and the public. Health laws are usually science-based, thereby allowing their application to be free from political bias. In reality, however, we often see that the needs and desires of our clients invariably come into conflict with these laws. If left unresolved for too long and depending upon the political currents of the day, these conflicts may ultimately lead to legislated exemptions. While these exemptions have been politically crafted to answer specific problems, they often end up undermining an Environmental Health program's broader ability to protect and best serve its community. The Peking Duck exemption legislated into the California Uniform Retail Food Facility Law many years ago comes to mind, and the Korean Rice Cake defeat is a more recent embarrassment. If we are to keep such poor legislation from continuing to dilute the integrity of sound health laws, then we have to actively start looking to find ways in which to make our public health programs more effective at resolving these client conflicts.

The Clash of Cultures

The California coastline is home to our nation's largest shipping harbors through which much of the world ships its foods, goods, and services. Along with these commodities, we also welcome the people coming from these nations as they arrive to test their fortunes. They set up businesses in our shopping malls and settle their families into the neighborhoods nearby. As they move in and enrich our communities, they also bring with them the food, and the beliefs and attitudes of their own cultures. Whether it is a newly immigrating population or a sole individual, conflicts between the health behaviors of a population and its greater community can usually be traced back to the differences in personal beliefs. As health regulators, we should be prepared to understand and respond to the changes that these shifting populations bring to our communities. The difficulty is in discovering how to change specific community beliefs that pose unacceptable risks. Without changing those paradigms, we are likely to end up only changing health behaviors on a momentary basis. As we know, without buy-in from all parties involved you can't really count on a long term behavior change.

In our daily work with restaurant and market owners, we frequently witness new immigrants as they make their plunge into the American free market system. As a matter of course, the manner and method of their food production comes directly from what is practiced in their native country.

The traditional foods of Vietnam are commonly made from cooked rice and are sold at ambient temperatures.

However, when they discover that one or more of their production methods doesn't coincide with the California health laws, we find that several things may happen:

- The operators will change to conform to the State standards
- The operators will continue doing what they have been doing in their country for (as we have all often heard) "thousands of years"
- Or, the operators will simply "go underground," and do their best to hide these practices from the health regulators.

Most of the time, we see some combination of them all.

When we come upon one of these culture-clashes, our regulatory hat is, usually, readily at hand. That's not to say we don't try to educate the operators first. By and large, we all do. But are we earnestly being persuasive in the process or just being autocratic? Are there repeating or common barriers that we should be picking up on? Experience has taught us that in order to persuade someone to significantly change the way in which they run their business we have to begin by making sure that we even understand each other.

The lack of language skills within our diverse communities remains one of the toughest and most time consuming hurdles that we face. In California, there are more than 200 different languages being spoken in our towns and cities. *(see Chart 1)* 40% of Californians speak languages other than English in their home. Spanish is the second most common language being used in the home, at a rate of 27%. This means is that many of our public health messages are probably not getting through to the people we regulate and the communities that we want to work with.

Perhaps an even more significant barrier to communicating with immigrant communities is a mutual lack of understanding of each other's culture. In some cases, language is not the issue. To understand the perspective of an operator often requires an understanding of their community's beliefs and values. When an operator is informed that they are going to have to make dramatic changes in the way that they make their foods, this is typically a very stressful moment for them. In some cases, their food preparation procedures have been followed a certain way for generations. These moments are certain to be critical in the agency's attempt to gain compliance and will involve very real food

Languages Spoken at Home	Estimated total Number of Californians	Percentage
Total California population five years of age and older	32,115,612	100%
English only	19,013,201	59.2%
Spanish	8,681,074	27.0%
Other Indo-European languages	1,341,352	4.2%
Asian and Pacific Island languages	2,831,183	8.8%
Other	248,802	.8%

Chart 1: Statistics taken from U.S. Census Bureau. American Community Survey 2003 Data profile http://www.census.gov/acs/www/Products/Profiles/Single/2003/ACS/Tabular/0400us

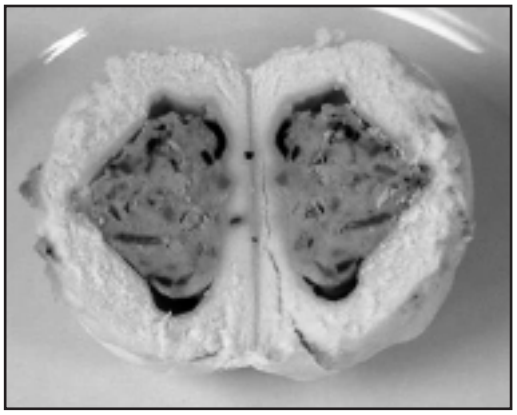
safety risks associated with it. How we choose to deliver this message, however, often determines our success in changing an operator's perspective, and in being able to affect a long term change. Recently, in Orange County, we decided to look at some different options to resolving a long-standing, culturally based issue.

The Challenge

The Orange County Health Care Agency is responsible for food safety issues within the county's retail food facilities. The Environmental Health Division assumes this responsibility through an active inspection program designed to prevent foodborne illnesses. In monitoring the food facilities within our county's Vietnamese community, however, Environmental Health has been challenged in persuading operators to

Pork sausage rolls can successfully be kept at proper holding temperatures, but typically aren't.

adhere to temperature control regulations for many of the traditional Vietnamese foods. These foods are typically made fresh daily, and often are made from cooked rice or cooked rice noodles. Quite often they are packaged in advance as a "to-go" item for customers to quickly purchase and take with them. In addition to the rice, these products often include portions or fillings of cooked



The Banh Bao is similar to a dumpling in texture, often with a meat filling.

pork, beef, chicken, or beans. Within the community, these foods are typically produced and consumed at ambient temperatures. For many years, Environmental Health has been challenged in persuading the retailers of these food products that holding these foods out at ambient temperatures is both unsafe and unlawful.

The retailer's objections are that as cultural foods, the Vietnamese public is accustomed to buying and consuming them at room temperatures, and that maintaining these foods at ambient temperatures is both a safe practice and an honored tradition! Furthermore, when retailers attempt to temperature control the foods (keeping them at or above 135°F, or at or below 41°F) the taste and texture of the foods become unappealing to their customers. Indeed, when these foods are chilled at refrigeration temperatures the texture of the rice hardens and when the products are heated they tend to lose their jelling characteristics. In either case, the Vietnamese public considers the products to be unappealing and in some cases the foods are perceived as being old. It should be pointed out that freshness is an essential quality that the Vietnamese public values in their food.

The Resolution Process

So, what Orange County experienced has been a test of wills between a culture and a Public Health agency with regulatory oversight. As regulators, we may not always fully grasp the significance of a tradition. In turn, the community may not fully comprehend the importance of and need for the laws and regulations that we enforce. Ultimately, the County decided that it would take the collaborative efforts of regulators, facility operators, and community leaders if they were to make any real progress in the area of safeguarding these traditional foods. Environmental Health recognized that it is the individual relationships they build with their operators that develop a mutual trust and that give the Agency the credibility it needs to be effective. In this case, however, we needed to go to a higher platform in order to talk with the community as a whole. We identified and approached the gatekeepers of the Vietnamese community and asked for their help in finding ways to work collaboratively on resolving this issue.

Using the Social Networking health behavior strategy found in *Health Behavior and Health Education: Theory, Research, and Practice. 3rd ed.* as a guide, an intervention plan was designed to address Vietnamese Traditional Foods.

Retailers will continue to sell the Vietnamese traditional foods at room temperatures as long as their customers expect it of them.

Social Network Strategy
A Community-Organizing Approach

This is a community problem-solving intervention that attempts to enable a target population to resolve a specific problem that has been identified within their community.

The goals of the strategy are to:

- Enhance the capacity of the community to resolve its problems
- Increase the community's role in making decisions that have important implications for community life
- And, to resolve a specific problem (handling traditional foods).

Keeping the first point of this framework in mind, the Agency's intention was to collaborate with the Vietnamese community to enhance their ability to solve a specific community issue. In the second point, the Agency's intention was to build a network of contacts between the Vietnamese community and the Health Care Agency that could be used in an ongoing basis as issues arose. And, of course, it was the Agency's intention to begin the process of problem-solving the food handling issues associated with the Vietnamese Traditional Foods. Using grant monies from the US Food and Drug Administration (USFDA) and a community-based health promotion intervention, Environmental Health assembled a *Partnership Committee* comprised of food facility operators, public health educators, regulatory staff, and public leaders from the county's Vietnamese community.

Although in-house presumptive testing already found these foods to be potentially hazardous, definitive testing would be needed to form a base-line for the committee to work from. Microbial challenge studies were conducted on a representative sampling, and test results indicated that the foods were indeed potentially hazardous foods. The Partnership Committee now needed to address the issue head-on. The proof lay before them and they had to jointly resolve it in a way that was: lawful, culturally sensitive, achievable, and (ultimately) acceptable to the public.

The Partnership Committee reviewed the following options:

1. No change
2. Temperature control of the product
3. Make the food to-order
4. Make specific food production formulas and operational standards
5. Acidify the product
6. Use the Time is a Health Control procedure

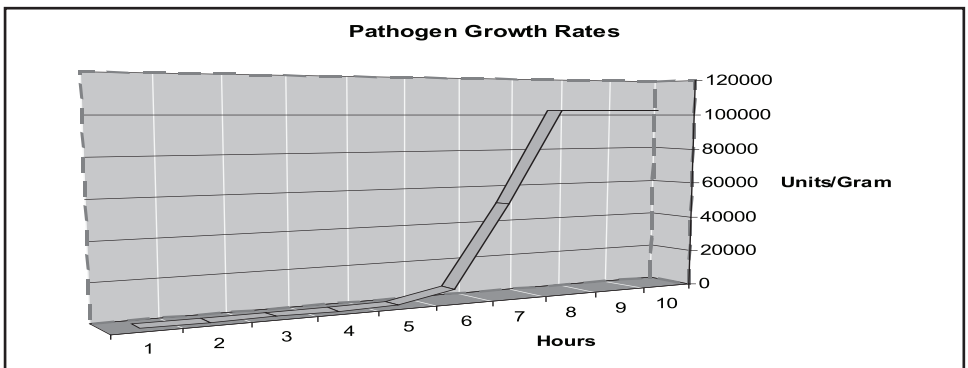
The first option, **No change**, failed the first criteria, as it was contrary to the public health laws. The second option, **Temperature control of the product** actually does work for some of the foods, most notably several of the forcemeat products. It does not work, however, for the majority of the food products. The third option, **Make to order** would work for some products, such as sandwiches, but it has a limited range of usefulness as many of these foods take a substantial amount of time to prepare. The fourth option, **Make specific food production formulas and operational standards** addressed the approach of limiting the risks of foodborne illness through a strict standardization of the production of each food product, which simply was not feasible or desirable from a retail production end. For the fifth option, **Acidify the product,** presumptive testing actually discovered that some foods (such as rice noodles) might already be adequately acidified, even though the manufacturers are not indicating an acid product in the ingredients. Otherwise, changing a product's taste characteristics would have a limited appeal. The sixth option, **Time as a Public Health Control (TPHC)** essentially allows the foods to be held for four hours without temperature control, and this option held some promise.

When a potentially hazardous food (PHF) is removed from temperature control, there is a lag period before a rapid and progressive growth of pathogens begins. *(see Chart 2)* During this lag period, PHF's are perfectly safe for preparation, holding, or consumption. After this lag period, bacterial growth is logarithmic making the food unsafe even if placed back under temperature control. The Conference for Food Protection has stated that critical control points and critical limits for using time as a public health control are universal for PHFs. Based on recommendations from the Conference for Food Protection and research findings, the USFDA incorporated the standard requirements for using time as a public health control (TPHC) into the Federal Model Food Code. So, the TPHC procedure allows for a 4-hour grace period of holding potentially hazardous foods at ambient temperatures. It is now a part of the California Health and Safety Code as a derivation of the FDA Food Code (HSC Sec. #113995).

Of all of the options, TPHC best met the needs of the Partnership Committee. As the committee selected the TPHC procedure, it realized that perhaps their greatest challenge would be educating the public about these changes. Past experience shows that public preference drives the market. The retailers have to meet those preferences in order to stay profitable. If the public doesn't buy into the TPHC, then it isn't going to work. The Committee incorporated the use of a health promotion theory known as Social Marketing to help sell the retailers and the rest of the Vietnamese community on the use of TPHC for the Traditional Foods. The Committee's first marketing action was to rename the TPHC procedure to the **Fresh is Best** procedure.

Selling the Solution

Social Marketing is a relatively recent addition to a health promoter's toolbox and it employs the same research and bag of tricks that Madison Avenue has used for years to get the public to buy their soap, cars, and deodorant. The main difference, of course, is that health promoters use their power to protect the health of a community rather than for economic gain. In a nutshell, it is an organized approach to wooing, or convincing people that they should want, if not demand that a specific health



	1	2	3	4	5	6	7	8	9	10
Series1	100	100	100	100	800	6,400	51,200	102,400	102,400	102,400

Chart 2: Pathogen growth rates.

related behavior be made available to them. It is all about generating the demand and then being prepared to deliver the services once the public outcry is heard.

The four basic elements of a marketing program include:

PRODUCT – Identify those incentives that can be offered to increase the likelihood of the target audience agreeing to a behavior change.

PRICE – Identify what costs or other barriers are likely to get in the way of the community adopting the changes, and what can be done to reduce them.

PLACE – Identify where and when these products should be delivered so that the community will have a ready access to them.

PROMOTION – People have to be made aware of the incentives, of the barrier reductions, and the product placement. The promotion or education is in the form of a public health message.

The **Product** being sold in Fresh is Best, is exactly what the product name implies. The Fresh is Best procedure would offer the community traditional Vietnamese foods that would be no older than four hours. Remember that this community values freshness in their foods.

The **Price** for this product is that retailers will have to make their products more often during the day. Translation: this is a no-cost benefit to the public!

The **Placement** of the product will be in their neighborhood restaurants and markets. This is exactly where the public will want it to be, as these are the places where it is most convenient for them to shop for their traditional foods.

The **Promotion** took shape in a full-court press promotional and educational blitz.

1. A brochure was developed in both English and Vietnamese to tell the story regarding the community's Traditional Foods, the work the Partnership Committee succeeded in, and the celebration about the good news in the Fresh is Best success story. All the benefits are clearly spelled out, including the "no-cost price to the public" incentive. A Flash version of the Fresh is Best brochure can be found on the Orange County Website at http://www.ocfoodinfo.com/
2. Preliminary ads were put into several of the community newspapers to announce Fresh is Best and to invite the community to participate in a Town Hall meeting with Partnership Committee members to discuss the program.
3. A Town Hall meeting was held and the press came and reported on it.
4. A seven-week ad campaign was held in several of the community's daily newspapers, weekly magazines, and daily radio programming.
5. TPHC's are being promoted within the Food Protection Program, and the Agency sees this as a work in progress. It is too soon to try and forecast the long-term benefits, although we are seeing many TPHC procedures coming in to our food program. This project was never designed to be a true experimental study, or to have quantifiable outcomes to measure the success of the project's interventions.

The Outcome

The real and very immediate qualitative benefit has been in the doors opened and bridges made into our Vietnamese community. As an example, if and when the avian flu starts to make its impact on our shores (and California is a very likely starting point for the nation), we have now built some bridges with community gate keepers who we can call upon to help as our agency needs to gather data and get information out. Perhaps the greatest value of this project is that our agency can pick up the phone and have a conversation with people who know the community and who know that we are concerned about its health and welfare.

As Public Health professionals, we are educators by definition. In a world where the boundaries between cultures continue to blur, our efforts to be effective as educators are allowing us to explore different methods where we will learn as well. Ultimately, it's about effective communication within the communities that we serve. It's about building those bridges that allow us to address the issues of today, and hopefully, will still be there when we need them tomorrow!

For more information on the Fresh is Best Program please go to Http://www.ocfoodinfo.com/ or contact Mr. Ralls at jralls@ochca.com

John Ralls has worked for the Orange County Health Care Agency for the past 19 years. He is currently a Supervising Environmental Health Specialist in the Food Protection Program. He is also pursuing a Masters of Public Health at Cal State University, Fullerton.

President's Message continued from page 3.

I plan to continue the implementation of the CEHA strategic plan that is currently in place. However, my primary focus for this coming year will be on increasing membership in CEHA. Our current membership numbers are alarmingly low. CEHA is not just about the people you elected to be board members. CEHA is about all of us who are members. CEHA is here to represent you. But, CEHA cannot exist without members. There are 3,062 active Registered Environmental Health Specialists in the State of California. Think of the voice we would have if all of us spoke as one. We all need to come together. Our future depends on this.

Lastly, for those of you who were unable to attend the 2006 Annual Educational Symposium in Anaheim, I can only say you missed a wonderful opportunity to learn about the latest educational updates and issues in our profession and network with your peers from around the state. I wish to sincerely thank Dianne Martinez, AES General Chair, and her exceptional AES Committee for hosting the 2006 AES. Their hard work and sacrifice was very evident throughout the entire AES; and, it was reflected by the success of the 2006 AES.

I am looking forward to this coming year as your president. I expect challenges ahead and will be looking for members willing to help our cause. Perhaps there is someone out there among you that is willing to step up and give me a hand.

As always, I am at your service.
Be well.

Pool Hydraulics

By John Ott, CPO

Pool hydraulics is one of the most important considerations for sizing equipment for a swimming pool and one of the most misunderstood. When asked to do a seminar for the CEHA AES this last May, I was honored and immediately stressed. What do I pick as a subject? Hydraulics was my first thought and thus became the subject. Since there were 50 minutes to present this topic and hours of material, it was hard to decide what to include. Suction had to be included because it is a safety issue and it ties in with hydraulics.

Before proceeding, a definition of hydraulics is needed. Hydraulics is nothing more than the study of liquid in motion and at rest. The person who compiles the articles for our company tech bulletins coined this definition; *"Hydraulics are the bloodlines of a swimming pool's pump & filtration system – an arterial system similar to the human body's – a mechanical, pulsating system that cleanses, recycles and reliably maintains a healthy body and flow of water."*

One of the main points to get across to any class is the concept of "Total Dynamic Head". TDH as it is called is nothing more than all the factors that cause resistance and how much water a pump will pump in a given system. The following list of factors, along with the gallons per minute (GPM) requirement provide the information needed to pick the proper pump for a specific pool.

Recommended GPM Per Pipe Size	
Pipe size	GPM
1.5"	55
2"	85
2.5	120
3"	180
4"	305

Figure 2: Pipe sizing chart

- *Filter*
- *Heater*
- *Pipe Size*
- *Pipe Length*
- *Plumbing Fittings*
- *Chlorinators*
- *Cleaner Valves*
- *Water Features*
- *Main Drains*
- *Skimmers*
- *Return Fittings*

Figure 1 is a standard pump curve chart. It is possible to pick the right pump for a system by determining a pool's TDH and GPM requirement, and then comparing those requirements to the performance data shown on the chart. When sizing equipment, always size the pump first. Then size the filter to the pump.

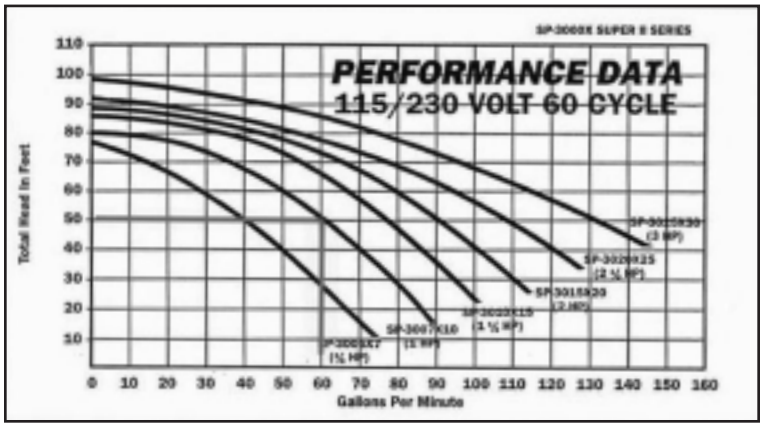


Figure 1

Once I was actually in front of the class, the realization set in that the time allotted to cover the subject was not going to make the class happy. Questions were coming from all directions. Good questions deserving a full answer. The class was hungry for hydraulic information.

There was still more to cover. The relationship between pipe size and flow rates is an integral part of understanding hydraulics. Figure 2 shows the maximum flow rate for different size pipe.

The speed through the pipe correlates to the ability of the pipe to carry water efficiently. When the speed exceeds 8 to 9 ft per second through a pipe (no matter the size) the amount of restriction goes up exponentially. By designing systems that keep water traveling within the recommended GPM, (Figure 2) the restriction to flow or TDH is limited.

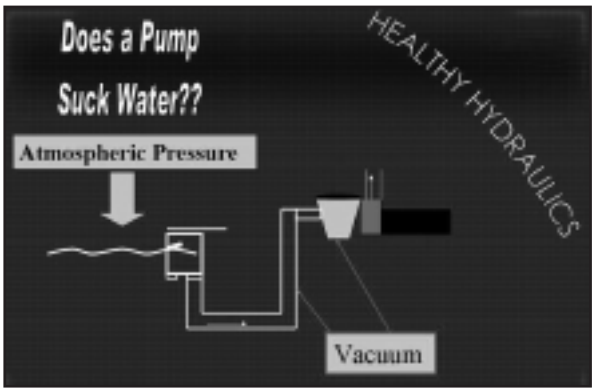


Figure 3

Figure 3 aids in understanding how a centrifugal pump works. An airtight suction line is required for a pump to work efficiently. A pump should have water in it before it is started. To start a pump working you remove the lid on the pump basket and fill the basket with water.

After you reinstall the lid and turn on the pump, the impeller of the pump evacuates all the water causing a vacuum in the pump basket. Since vacuums do not like to exist and you have atmospheric pressure on the surface of the pool, water from the pool will rush in to fill this void. Thus the process is repeated over and over. The one place in a system that suction needs to be controlled is between the swimmer and the pool suction fittings. As a result of entrapment deaths, entrapment guidelines have been developed to make pools and spas safer. Fittings from Haywood Pool Products, a leader in the manufacturing of

swimming pool equipment, along with information from the U.S. Consumer Products Safety Commission, found at http://www.cpsc.gov/cpscpub/pubs/363.pdf can help to ensure that swimmers are not entrapped.

It is very apparent that more training sessions on hydraulics would be helpful to the Environmental Health Specialists who routinely inspect public pools. When asked what more they would like, the answer was across the board, hydraulics.

In conclusion, it is apparent that hydraulics should be offered again at the 2007 AES. A thorough understanding of hydraulics will go a long way in helping California pool inspectors to be not only the best, but also to be those who others search out for help.

Mr. Ott has been the swimming pool business for 34 years. Twenty-three of these years have been with Hayward Pool Products. For the last eight years he has been the Western Technical Service Manager and is now the Western Regional Training Manager. He is considered to be the Hydraulics Guru at Hayward Pool Products.

Pools and Pathogens

By Ricardo Encarnacion, MPH, REHS

In 1978, a surveillance system for waterborne disease outbreaks (WBDOs) was expanded to include those incidents associated with recreational water. This national Waterborne Disease and Outbreak Surveillance System (WBDOSS), is managed through a collaborative effort of the Centers for Disease Control and Prevention (CDC), the U. S. Environmental Protection Agency (EPA) and the Council of State and Territorial Epidemiologists.

In the latest report released in 2004, a total of 65 WBDOs associated with recreational water was reported by 23 states for 2001-2002. An estimated 2,536 persons became ill, with 61 persons hospitalized and eight deaths. Thirty of the outbreaks involved wading pools where swimmers suffered from gastroenteritis. Twenty outbreaks were identified with dermatitis associated with spas or pools. All eight fatalities were attributed to primary amebic meningoencephalitis (PAM) caused by *Naegleria fowleri,* and all eight cases were traced back to swimming in a lake or river.

This article will discuss the elements involved in addressing a reported WBDO within the scope of the public health professionals, such as the Environmental Health Specialist (EHS), the Pubic Health Nurse or the Epidemiologist. Many jurisdictions may be faced with resource issues when confronting a public health outbreak or incident associated with a pool or spa. You may be a part of a Public Health Outbreak Response Team, or you may be responsible for multiple duties as part of an outbreak response.

Read the following scenarios and picture your role in your department's response:

SCENARIO 1

- One case of Giardia is reported 30 days late
- Patient has a history of international travel for surfing
- Patient reports using local community pool and college pool weekly

SCENARIO 2

- Tourist reports to EH about stay at local motel and use of pool and spa, 3 weeks ago
- Says he and co-traveler are diagnosed with Folliculitis
- Tourist reports motel adds chlorine to spa before use is allowed.

SCENARIO 3

- One case of Shigella is reported for a toddler
- Toddler uses 3 public wading pools
- Toddler also goes to day care

SCENARIO 4

- One case of cryptosporidiosis is reported by a family at a travel park. Park has a pool.
- Two days later, 2nd case, unrelated party, is reported for the same park.
- Ill parties have now traveled elsewhere

Having an outlined plan will assist you when responding to a WBDO.

Four key areas can represent a systematic approach when responding to a WBDO: Pools, Pathogens, Process and Paperwork.

POOLS: Not all pools are created equal. As we all know, the nature and use of each type of pool is unique. The clues are hidden there for the well trained EHS, Public Health Nurse or Epidemiologist involved in a WBDO investigation.

Pools are a subset within the area of recreational water. It's important to know what type of pool was involved as it may give insight as to who is at risk. Investigating a WBDO involving children at a wading pool is different than an outbreak at an Olympic style pool involving competitive swim teams from across the nation. You may receive a vague report where there was the person who swam in a "pool of water", but wasn't structurally a swimming pool. We can picture the potential differences and variables as we list the various pool types we may encounter:

Continued on page 14.

Pools and Pathogens, continued from page 13.

- Public vs. Private/Residential
- Fresh Water vs. Treated Water
- Heated vs. Unheated
- Fill and Drain
- Spa – Whirlpool (Jacuzzi)
- Swimming Pools (Outdoor)
- Pool by the Beach
- Interactive Fountains
- Spas/Whirlpool Tubs
- Spas - Hot Springs
- Wading Pools

There is more to a pool than just recirculating water. The public health professional must have an understanding of the equipment and its operation to identify potential contributing factors to the outbreak. Recall pool basics such as:

- Recirculation Equipment
- Safety Equipment
- Water Chemistry
- Sanitizer residual
- Ancillary Features

An awareness of pool types and operations is essential in responding to WBDOs.

PATHOGENS: A patient may find that a diagnosis of Folliculitis suspected from pool water to be very technical, but to many the disease relation to recreational water is as vague as a case of gastroenteritis from a wading pool. Most people are familiar with Cryptosporidium, Shigella and E. coli. But how do they relate back to filtration and disinfection in a pool? Do you know how pools and pathogens are related to the following conditions: Gastroenteritis, Swimmers Ear, Hot Tub Rash, Folliculitis, Swimmers Ear and Swimmer's Itch?

As a response member you should know the following potential pool related pathogens:

Cryptosporidiosis
- Cryptosporidium parvum (protozoan)
- 3-5 microns
- Symptoms: diarrhea, abdominal cramps, loss of appetite, low-grade fever, nausea, vomiting

Some people are asymptomatic. The disease can be prolonged and life-threatening in severely immunocompromised persons.

Giardiasis
- Giardia lamblia (protozoan)
- 11-14 microns
- Symptoms: diarrhea, abdominal cramps, bloating, weight loss, or malabsorption.

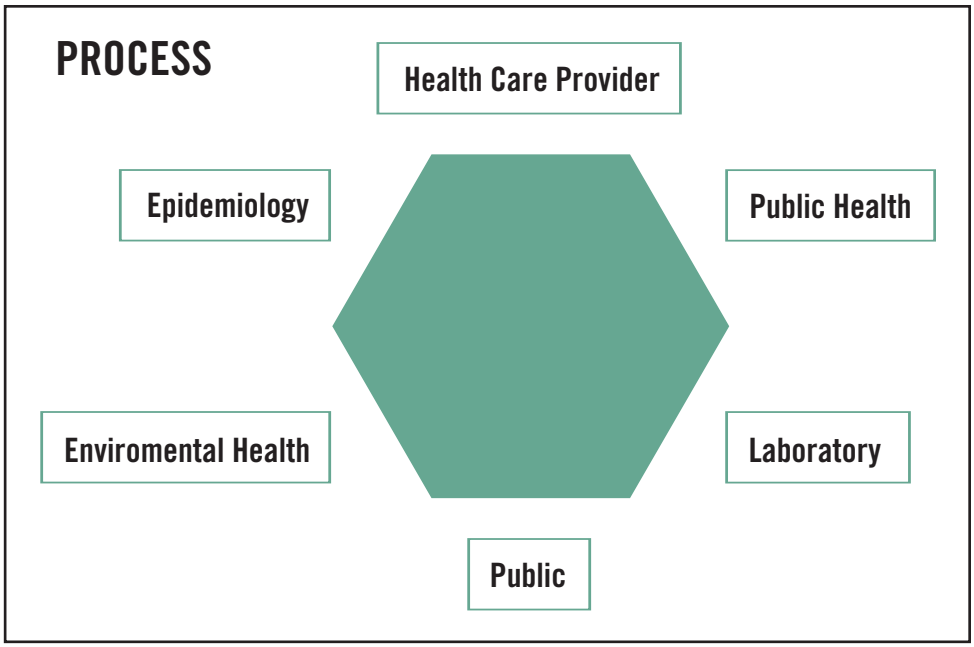


Figure 1

Shigellosis
- Shigella species (bacteria)
- Gram negative, anaerobic, rod shaped
- Symptoms: diarrhea, fever, nausea, cramps, and tenesmus.
- Infective Dose: 10-200 organisms
- Asymptomatic infections may occur.

E. Coli O157:H7
- Gram-negative rod-shaped bacterium producing Shiga toxin(s).
- Symptoms: Acute bloody diarrhea, abdominal cramps, little or no fever; HUS
- Infective Dose: very low

Other potential pool associated pathogens of interest are:

Pseudomonas aeruginosa
Staphylococcus
Legionella species
Mycobacterium
Bacillus species
Naegleria fowleri

In general, a properly working pool or spa will prevent the transmission of a host of the aforementioned pathogens. Knowing standard control measures and incident data will factor into your recommendations and intervention strategies.

PROCESS: Surveillance systems vary throughout the nation. You may be involved in a passive or active surveillance system. You need to ask yourself: "Is one case of illness a prelude to a major outbreak?" What are the components and roles within your system that can handle the situation?

The model in F*igure 1* is a suggested model and does not supersede an agency's requirements. Everyone needs to work together to minimize the duplication of effort and to maximize the results. The list below details the responsibilities and potential issues to overcome when planning your WBDO standardized response:

Health Care Provider responsibilities:
- Diligent in Diagnosis
- Prompt Reporting
- Coordinate with Public Health
- Advise patient of precautions

Health Care Issues
- Incorrect Diagnosis
- Delayed Reporting
- No patient contact information
- Limited access to Health Care
- Asymptomatic Patients

Prompt reporting of illness can identify those cases of Cryptosporidiosis, Giardiasis, E. Coli O157:H7, Shigellosis, Swimmers Itch, or other WBDO. Also, prompt reporting includes patient contact information to allow for Public Health departments to follow-up.

Public Health
- Conduct passive/active surveillance for illness
- Interview/Interface with the patient
- Collect specimens (as needed)
- Coordinate with laboratory, environmental health, and other agencies
- Provide Media Relations Support
- Coordinate reporting to state

Public Health Issues
- Limited or new staffing
- Communication problems (computer failure)
- Delayed reporting to state
- No advance list of contacts
- No media training
- Unable to make contact for interviews

Consider cross training public health nurses with a familiarization field visit conducted by the EHS.

Environmental Health
- Conduct the Environmental Assessment
- Interface with Pool Operator/Owner
- Collect field data and/or samples
- Close pool as warranted/directed
- Coordinate with laboratory, public health, and other agencies

Environmental Health Issues
- Limited or new staffing
- Obsolete contact data for pool operator
- Need proper sampling equipment
- Dealing with irate pool operator
- Outdated contact list for agencies

The environmental assessment will address the conditions observed at the pool. The EHS records indicate the current conditions (inspection results) which may lead to conclusions of the conditions at the time of the potential exposure (past conditions).

Environmental Health Contributing Factors
- High bather load
- Fecal accident
- Use by diaper/toddler age children
- No disinfection
- Inadequate disinfection
- Poor monitoring of disinfection levels
- Cross contamination
- No filtration
- Inadequate filtration
- Pump problem
- Excess cyanuric acid
- Improper heating

Check operational status of wading pools. Are pumps, filters and chlorinator working properly? Check with pool operator regarding the use of the pool by children in diapers. Use this as an educational opportunity regarding WBDOs to the operator and to the public involved.

Laboratory
- Confirm lab results
- Design sampling plan (as needed)
- Analyze samples, isolates, etc
- Coordinate with public health, environmental health, and other agencies
- Contact state/federal labs (as needed)

Laboratory Issues
- Limited or new staffing
- No samples to analyze
- Sampling or lab cross contamination
- Left out of the communication loop
- Delayed analysis by state or other lab
- Conflict with other priority projects

Epidemiology
- Generate hypothesis -Analyze data
- Define - person, place, time
- Generate Epi curves
- Coordinate with public health, environmental health, laboratory, and other agencies
- Determine statistical significance

Epidemiology Issues
- Single case versus statistical significance
- Confounding factors – International Travel
- Confirmed, probable and suspect cases
- Delayed data analysis

Public
- Assist with interviews (case-control studies)
- Do not swim in cloudy or green pools
- Shower before swimming
- Do not swim when ill
- Report fecal accidents to pool manager

Public Issues
- No contact information
- Swimming while ill
- Ill person is in a travel status (RV park patron)
- Asymptomatic person still in the pool
- Maximizing overhead cost for pool maintenance

Having a sense of the process and participants involved in responding to WBDOs will allow better management of the system. This outline highlights the importance of resource allocations and personnel training.

PAPERWORK: Mandated reporting is required for a reason and looks at the big picture of morbidity and mortality. On the local level, it's different. What kind of reports or case summaries did your predecessors leave you? Could you do better? The answer is probably yes.

Waterborne Diseases Outbreak Report – CDC 52.12 is a two page report utilized for WBDO surveillance. The investigating authority reports WBDOs voluntarily to CDC by using this standard form.

Review the proper use of your Chain of Custody forms when sampling. All reports are legal documents. The Chain of Custody details and validates water and specimen samples taken at the scene of the investigation.

Lab Analysis reports will also have to be included in your Final Summary Report, along with locally approved reports/documents. The Final Summary Report may include: the Epidemiology Summary, the Laboratory Summary, and the Environmental Health Summary.

As with all reports, state the Conclusions and Recommendations that have resulted from the Lessons learned. Note what can be done to prevent this from happening in the future.

In summary, focus on the Four P's of a WBDO response:
- Pools
- Pathogens
- Process
- Paperwork

Review the four scenarios mentioned at the beginning of this article, and see if you have a clearer view on your role and capacity in responding to a WBDO. Resource management and training will ensure you provide the best action in response to a WBDO, and implement intervention and prevention strategies against pathogenic illness, injury or deaths related to pools and spas.

RESOURCES

Outbreak Response Tool Kit - CDC
http://www.cdc.gov/healthyswimming/outbreak.htm

Division of Communicable Disease Control (Infectious Diseases Branch)
http://www.dhs.ca.gov/ps/dcdc/dcdcindex.htm

Centers for Disease Control and Prevention (MMWR; A to Z health topics)
http://www.cdc.gov/

Ricardo Encarnacion, is a Supervising Environmental Health Specialist with the County of San Diego Department of Environmental Health in the Food and Housing Division. He has over 12 years of experience in food safety, epidemiology, and health and safety programs. He also served in the US Navy where he was a Preventive Medicine Technician. He is currently the President-Elect of the Southwest Chapter of CEHA.

Microbiological Safety of Drinking Water: United States and Global Perspectives*

By Timothy Edgcumbe Ford, Department of Environmental Health, Harvard School of Public Health, Boston, Massachussetts

The following article Microbiological Safety of Drinking Water: United States and Global Perspectives will be viewed in 3 parts of the CEHA Bulletin. *The first part will cover the Burden of Waterborne Disease, displayed in this publication. The second part will be printed in the Spring issue and will cover the etiology of waterborne disease; bacteria, Protozoan, and viral pathogens. The last section will be displayed in the summer issue and will cover water treatment and advances and limitations in methodology. The full article can be found in its entirely in the* Journal of Environmental Health Perspectives. *Microbiological Safety of Drinking Water: United States and Global Perspectives written by Timothy Edgcumbe Ford,Environmental Health Perspectives. 1999 Feb;107 Suppl 1:191-206.*

Water Treatment and Pathogen Survival Strategies

It is beyond the scope of this review to discuss water treatment in detail; however, many excellent texts address this topic.[28,158] Filtration (with precoagulation/flocculation) remains one of the most effective means to minimize pathogen loading to the distribution system. However, disinfection is still necessary to protect public health. Modern treatment plants often apply disinfection prior to filtration (primary disinfection) and to the finished water to maintain a residual in the distribution system (secondary disinfection). Choice of disinfectant may be important in the patterns of pathogen survival. Ozonation is becoming increasingly popular as a primary disinfectant, as it requires a much shorter C·T (concentration contact time) for deactivation of the cysts and oocysts of *Giardia* and *Cryptosporidium* compared to chlorine. Ozonation has additional advantages in that it oxidizes nuisance organics that convey odor, taste, and color problems to finished water. However, ozonation byproducts are poorly characterized.[160] In addition, the strong oxidizing capability of ozone may also result in production of readily assimilable organic carbon compounds (AOC) that have been shown to stimulate biofilms and coliform regrowth in distribution systems.[159] Approaches to reduction in AOC involve removal through biologic filters or adsorption to granular-activated carbon,[28] technologies that rapidly increase the cost of water treatment beyond the scope of many utilities.

The reactivity of ozone also results in minimal residual disinfection capacity in the distribution system. To maintain residual disinfection, either chlorine or chloramine is applied to drinking water. This is generally the case for both filtered and unfiltered water supplies. Although chloramine is a less effective biocide than free chlorine, it maintains a residual concentration for a longer period of time in the distribution system. It also appears to permeate biofilms more effectively than free chlorine and to control their development. Other advantages of chloramination over chlorination include reduced production of chlorinated byproducts. However, there are reported problems with increased numbers of nonpathogenic bacteria and associated taste and odor.[28] The solution appears to be an occasional return to free chlorine and frequent flushing of the system.

Whichever mode of disinfection is employed, one that reduces biofilm formation or one that more effectively eliminates suspended bacteria, pathogens will not be entirely eliminated from the distribution system. It appears that water treatment and, in particular, disinfection provide selection pressures on pathogens that promote a wide range of survival strategies. Almost all bacteria tested in the laboratory appear to be capable of taking advantage of some form of resistance mechanism. Although contested by one report,[161] the viable but nonculturable (VNC) form has now been documented for a large number of bacteria including pathogens such as enterotoxigenic *E. coli, V. cholerae, Salmonella* spp., *Shigella* spp., *C. jejuni,* and *L. pneumophila.*[162-165] Exposure of enteric bacteria to stress may result in the VNC state, in which survival is enhanced by a dormant or injured condition that prevents culturing on selective media. Although these bacteria are no longer detectable by standard microbiologic methods, they retain their pathogenicity and may still cause disease if ingested by the human host.[166]

Many different bacteria have been shown to survive and in many cases grow within protozoan hosts. Studies have shown that this survival mechanism protects the pathogen from disinfection and may also be important in initiation of virulence and transmission of disease.[99,167] King and co-workers[131] were able to show that a number of different bacteria, including pathogens, could be ingested by the protozoa *Acanthamoeba castellanii* and *Tetrahymena pyriformis*. These protozoa were then able to survive and grow in concentrations of free chlorine that killed free-living bacteria (10 and 4 ppm, respectively). The tested bacterial strains, including the pathogens *S. typhimurium, Yersinia enterocolitica, Shigella sonnei, Legionella gormanii* and *C. jejuni,* could be subsequently cultured from the treated protozoans. Considerable attention has been focused on the intracellular replication of *L. pneumophila* in protozoan hosts.[168,169] The protozoan *A. castellanii* has recently been shown to resuscitate VNC *L. pneumophila* to a culturable and infective state.[170] Berk and colleagues[167] have shown that two *Acanthamoebae* spp. expelled vesicles containing viable *L. pneumophila* and suggest that these vesicles could be important agents for transmission of disease.

A recent study[130] reports that *Mycobacterium avium* resides within outer walls of *Acanthamoeba polyphaga* cysts and can grow saprozoically on products secreted by the organism. This is in contrast to *L. pneumophila,* which is found within the cysts, and suggests that there are separate reservoirs for these two opportunistic pathogens during unfavorable conditions. It has been hypothesized that the mode of exposure to these organisms can effect disease outcomes. For example, ingestion of amoebae containing *L. pneumophila* results in exposure to high numbers of infective organisms. These organisms are not only adapted to parasitize amoebae but also are ideally suited to parasitize alveolar macrophages. The result is Legionnaires' disease.[14] Ingestion of biofilm-associated or free-living *L. pneumophila* may result in exposure to lower numbers of infective organisms with disease outcomes such as Pontiac fever or minor infections.[99] These hypotheses have yet to be rigorously tested but may also be important in assessing disease outcomes from exposure to other pathogens.

Considering the increasing literature on biofilms, it is surprising that comparatively little information is published on the patterns of pathogen survival (including viruses and protozoa) in drinking water

biofilms. The biofilm provides a nutrient-rich, protective environment that should promote survival of enteric pathogens.[4] Redox dyes have been used to differentiate respiring and nonrespiring cells in mixed *K. pneumoniae* and *Pseudomonas aeruginosa* biofilms.[171] Greater respiratory activity was measured in cells deep in the biofilm after application of biocide, consistent with the biofilm's protective role. Also, experiments to test substratum topography on susceptibility of *Salmonella enteritidis* biofilms to trisodium phosphate indicated that the bacterium survives in greater numbers in thicker biofilms associated with artificial crevices.[172] Microcosm experiments have also provided evidence that *Campylobacter* spp. persist for extended periods (several weeks) within biofilms[173] There is also limited information on persistence of *L. pneumophila* in biofilms,[174] focused on types of plumbing materials colonized by this pathogen. Recent unpublished research has shown that a clinical isolate of MAC can survive for several months within a model *P. aeruginosa* biofilm[175] More research on the role of biofilms in pathogen survival is needed to begin to estimate risks of disease from biofilm sloughing within the distribution network.

Far less is known about protozoan and viral survival mechanisms. Many protozoa form cysts or oocysts that are extremely resistant to disinfection and, as already discussed, many of the bacterial pathogens take advantage of these cysts for their own survival strategies. A recent report identified microsporidialike parasites infecting amoebae (*Vanella* spp.) isolated from a domestic potable warm-water system.[15] If the parasites are confirmed as microsporidia, it will be interesting to see if the intracellular survival state is common for these organisms, including species that infect humans.

There is no information in the literature on survival of pathogenic viruses in protozoa, although this survival strategy should not be ruled out. Adsorption to particles or even colloidal organic material has long been suspected as a mechanism to convey disinfection resistance to viruses. Certainly, the rotaviruses and many of the enteroviruses appear to survive in chlorinated water.[147] There is also some evidence for reactivation of previously iodine-disinfected bacteriophages (MS2) when proteinaceous material is present in the water.[176] The limited literature on drinking water biofilms and viruses has focused primarily on the importance of bacteriophages in gene transfer in biofilms.[177] As with many of the bacterial and protozoan pathogens, the role of the biofilm is probably important in enteric virus survival, but considerable research is needed to obtain a clearer understanding of mechanisms involved.

Advances and Limitations in Methodology

The advent of microscopic techniques to image biofilms and to prepare thin sections using, for example, cryosectioning and confocal microscopy,[171] allows direct observation of pathogens within biofilms by using specific antibody staining.[175,178] This is beginning to help in investigations on the protective role of biofilms. For example, Figure 2 shows a clinical isolate of *M. avium* that has both survived and proliferated under a biofilm of *P. aeruginosa* in a circulating model tap water system.[175]

Figure 2. Confocal micrograph of a mixed biofilm of *Pseudomonas aeruginosa* and *Mycobacterium avium*. Biofilms were incubated with rabbit polyclonal antibody to *Erdman lipoarabinomannan,* a Mycobacterium cell-wall lipopolysaccharide, followed by goat anti-rabbit antibody conjugated to rhodamine. M. avium (brightly stained) appears to be clustered close to the biofilm substratum interface (left side) (micrograph courtesy of R. Rogers (Biomedical Imaging Laboratory, Harvard School of Public Health, Cambridge, MA). Bar = 20 µm.

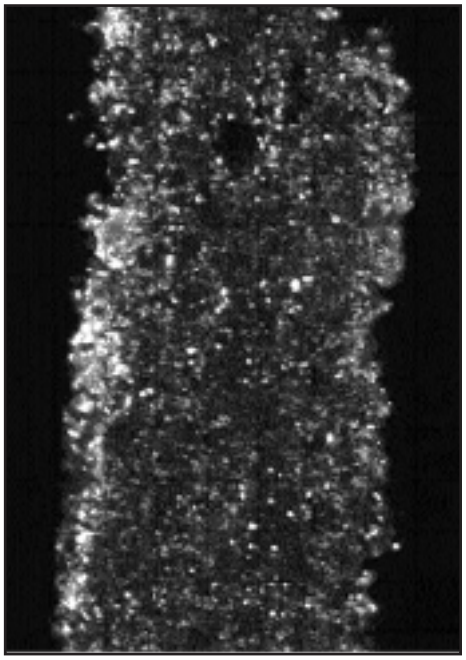


Figure 2

New methodologies are changing the approach to monitoring pathogens in drinking water and will therefore affect our ability in the future to assess risk. At present it is difficult to establish concentrations of specific, viable, and infective pathogens in drinking water. The increasingly widespread use and continuing development of flow cytometry, in situ polymerase chain reaction (PCR) to the single-cell level, magnetic separation techniques, and reverse transcription PCR179-183 is dramatically improving detection of specific pathogens and pathogen viability in drinking water. Accelerated development of these techniques has been stimulated partly by the U.S. EPA Information Collection Rule--the requirement to monitor source waters for protozoa and viruses.[184] Considerable effort has gone into developing routine techniques for *Cryptosporidium* monitoring. However, immunocapture PCR that is sufficiently sensitive and specific to monitor extremely low numbers of viruses in drinking water samples is also at an advanced stage of development.[179,185] The critical challenge is how to make these new methodologies cost effective for pathogen monitoring, particularly in developing countries where resources are extremely limited.

Risk assessment methodologies also need further development. Any calculation of risk depends on considerable speculation concerning exposure pathways to the drinking water supply, infectious dose, and population susceptibility. Although attempts have been made to assess risks from drinking water pathogens, and in some cases models do appear to approximately predict incidence of disease,[186] uncertainties are enormous. Far better risk assessment methodologies are needed that take into account the uneven distribution of pathogens in drinking waters,[187] include better estimations of infectious dose, and can more accurately predict the infectivity of an organism under environmental conditions.[188,189] In addition, the inclusion of interactions among microbes and between microbes and chemicals in models that attempt to define exposure risk, as is currently being attempted for chemicals alone,[190] will eventually be necessary if accurate assessments are to be made.

Concluding Issues

The global burden of infectious waterborne disease is enormous. Reported numbers dramatically underestimate incidence of waterborne disease, particularly the low-

level endemic diseases that are widespread in both developed and developing countries. Pathogen survival strategies ensure that no treatment approach will be entirely successful in eliminating all pathogens from the drinking water supply. However, multiple barriers and optimization of treatment design can help to minimize the risks. Table 6 illustrates a typical approach.

Table 6. A multibarrier approach to maximize microbiological quality of water.[a]

Watershed protection that minimizes anthropogenic and wildlife impacts on source water, including programs to reduce the impact of waterfowl, particularly near water intake sites.

A treatment system with sufficient capacity to maintain adequate pressure throughout the distribution system for 24 hr/day, and that minimizes opportunities for microbial colonization in the distribution system. This could include

- Coagulation-flocculation and sedimentation[b] to remove colloids, associated microorganisms, debris, and macroorganisms
- Preozonation[c] to effectively kill microorganisms in source waters, reduce odor, taste and color, precursors for DBPs, and reduce the amount of chlorine/chloramine necessary to maintain a system residual
- Filtration to further remove particulates and microorganisms, including granular or biologic activated carbon[d] to remove AOC
- Chloramination[e] to minimize biofilm formation and reduce DBPs, with intermittent chlorination[f] and system flushing

A rigorous program to upgrade distribution system networks and prevent interconnections through leakage, backflushing, improper hydrant use, etc.

Information taken primarily from Geldreich.[28]

A. To be protective of public health, a rigorous monitoring program for microbial and chemical contaminants in source and finished waters needs to be maintained. This should be easily cross-referenced with a surveillance system for GI disease.

B. Coagulation-flocculation and sedimentation is recommended by WHO prior to primary disinfection to reduce DBP formation.[10] If ozone is used as a primary disinfectant, then this should also reduce formation of AOC.

C. If high concentrations of bromine are suspected in the source water, ozonation may cause formation of bromates and alternatives should be considered,[160] e.g., chlorine, chlorine dioxide or chloramines.

D. It is important to note that these filters may themselves become a site for regrowth of coliforms or opportunistic pathogens, without careful control of bacterial growth.

E. Chloramination may be particularly appropriate in deteriorating distribution systems as it is more effective than free chlorine at the higher pHs used for corrosion control.

F. Alternating disinfection may reduce the ability of pathogens to adapt to the drinking water environment.

There are, of course, effective alternatives to the scheme in Table 6 and approaches to water treatment and disinfection are an active area of research. For example, there is considerable interest in large-scale applications of membrane technologies for removal of pathogens and high molecular weight organic compounds. To achieve a multibarrier approach requires considerable resources and most water supply utilities are unable to meet these costs. At least for developed countries, a better understanding of the economic and health consequences of waterborne disease, attainable only through better monitoring and surveillance systems, may help both the public and policy makers understand the value of microbiologically (and chemically) safe drinking water.[3]

In developing countries where resources may be grossly inadequate, particularly in rural or transient communities, much can still be achieved by basic hygiene and sanitation programs. Population susceptibility may be reduced by immunization programs for other endemic diseases[22] and low-cost intervention programs can be introduced.[191,192] With any intervention program, care must be taken to avoid creating new problems while resolving existing ones. For example, widespread arsenic poisoning has resulted in Bangladesh and West Bengal from contaminated groundwater, the result of programs to reduce epidemic diarrheal disease from use of surface waters.[193,194]

New Waterborne Diseases

A wide range of factors promote waterborne disease epidemics. When hygienic conditions are compromised, waterborne disease outbreaks appear inevitable. Irrigation with wastewater, floods and other natural disasters, poor source water quality, and inadequate or aging water treatment facilities or failing distribution system networks are all contributory factors. This has always been the case; however, alarming trends are becoming evident in the emergence and resurgence of waterborne diseases. There has been a resurgence of older diseases in certain parts of the world, e.g., cholera in South America. However, it is more difficult to define the emergence of a new disease.[195] New routes of exposure to previously uncharacterized pathogens may result in emergence of disease. Increasing numbers of susceptible individuals (very young, elderly, pregnant women and immunocompromised)[196] could provide an extensive human reservoir for opportunistic pathogens and promote changes in virulence patterns, even in developed countries. In addition, increased adaptation to the human host could increase infection rates in populations with no underlying susceptibilities. Clearly, these are areas in which far more research is necessary if future risks from waterborne disease are to be accurately evaluated.

Infectious agents categorized as emerging diseases and not recognized until recently, or at least not in association with water, include *L. pneumophila, C. parvum, E. coli O157, V. cholerae O139, hepatitis E,* and *H. pylori.* Perhaps we should also add to this list every waterborne pathogen that has developed resistance to antibiotics or changed apparent virulence as they emerge as higher mortality risks. Multiple antibiotic resistance has been shown to be widespread in waterborne bacterial pathogens, and, as for nonwaterborne pathogens, is well-documented and represents one of the greatest threats to public health.[197-200] Examples exist for almost all waterborne bacterial pathogens

and represent what seems to be an inevitable consequence of extensive use of antibiotics, not only in the human population but also in agriculture and aquaculture.[201] Transfer of antibiotic and virulence factors in drinking water biofilms is a poorly understood area of research, but in principle they provide an ideal environment for horizontal gene transfer.[177,202,203] Biofilms could, therefore, represent an important risk factor in dissemination of antibiotic and virulence genes. In addition, genes for polysaccharide synthesis, conveying increased resistance to chlorine and preference for biofilm formation, could also be transferred in drinking water biofilms.

Critical Needs

In summary, needs for the future microbiological safety of water include:

- More realistic valuation of water. This requires better education on the value and limitations of the resource for both the public and policy makers.
- Improved surveillance systems. The burden of waterborne disease is constantly underreported and surveillance systems are inadequate. Intervention studies[24] and population surveys are necessary to provide a clearer understanding of disease burden from contaminated water in both developed and developing countries.
- Improved water treatment. Water treatment approaches are needed that minimize selection for treatment-resistant pathogens, biofilm formation, and production of disinfection byproducts.
- Improved monitoring. Cost-effective, pathogen-specific monitoring is needed to begin to evaluate risk in both developed and developing countries.
- New disease. Improved techniques, including predictive models, are needed to recognize conditions that result in resurgent or emerging disease.
- Risk assessment. Improved risk assessment methodologies are necessary to better model exposure scenarios and provide realistic estimates of pathogen infectivity.
- Population susceptibility. A better understanding is needed of the role of increasingly susceptible populations in transmission and perpetuation of waterborne disease.
- Global issues. Reduction in the burden of waterborne disease and the risks of new disease emergence requires an aggressive surveillance system on a global scale [e.g., using the online ProMED system[204]]. The international community must be prepared to provide rapid assistance, without regard for political boundaries when epidemic or new disease is suspected.

Acknowledgments: The author is grateful to J. Field, C. Corless, C. Cardel, and C. Higgins for the micrograph of Mycobacterium avium in biofilms and to J. Lisle for references on gene transfer. The author is also particularly grateful for comments from an anonymous reviewer and to A. Egorov for critically reading the manuscript.

** The article has been printed with permission fromThomas J. Goehl, Ph.D. Editor-in-Chief Environmental Health Perspectives www.ehponline.org DHHS, NIH, NIEHS goehl@niehs.nih.gov*

Energy Efficiency for the Office

Steve Spence, REHS, County of San Diego, Department of Environmental Health, Food & Housing Division.

Be a Part of the Team to Make California a Lean Green Machine

In the United States, 31% of all electricity is used to run commercial buildings. This rate continues to rise as companies add new office equipment. Energy use for office equipment is expected to rise by 500% in the next decade. Join other Environmental Health Specialists in conserving precious resources. Help is needed from everyone!

Be sure to turn off lights in offices and conference rooms when they are not in use. Consider where automatic room lighting controls may be installed in offices, conference rooms and storage rooms. These devices are similar to programmable thermostats and optimize lighting use by automatically turning lights on or off depending upon occupancy or time of day.

Turn off office equipment when it is not needed at night or on the weekends. Be sure to turn off your monitor at night. When counted together, computer monitors use more energy than any other piece of office equipment. Use energy saver modes on copiers, PCs and other equipment.

Reduce the use of paper. Office paper is the largest percentage of a company's garbage everyday. About 85% of office paper is currently discarded (over 7 million tons in the United States alone every year). In addition, commercial paper use increased 245% between 1960 and 1994 and continues to grow. Share electronic files, voicemail and e-mail with office mates instead of creating paper memos whenever possible.

Always use the second side of paper, either by printing on both sides or using the blank side as scrap paper. Use scrap paper to take notes instead of using notebooks, company pads, or message pads.

Recycle office paper at your office. Encourage your co-workers to recycle. Sometimes a simple reminder about the amount of paper that gets thrown away every year is all it takes! Make sure that recycling bins are located close to printers and photocopiers. If people have to walk to recycle materials they will usually throw them away instead. Provide multiple recycle bins that are located in work areas. If your office doesn't have recycle bins, make it a priority to get them.

BETTER TOGETHER

Orenco® Fiberglass Tank

AdvanTex® Textile Filter

Ask about our new Tank and Treatment combo. A perfect fit.

Every tank tested twice for watertightness

Our tank and treatment combo is the first complete turnkey package for wastewater treatment that includes both a tank and a packed bed filter. Simplifies plumbing. Reduces installation costs and errors. Compact and durable.

Most importantly, the Orenco Tank and AdvanTex Textile Filter make raw wastewater up to 99% cleaner, producing clear, clean, odorless effluent with less than 10 mg/L BOD and TSS.
Even under peak loading conditions.

Go to our Web site (**www.orenco.com**) for more information about Orenco Tanks and **AdvanTex Filters**, and the name of your nearest AdvanTex Dealer. Or just call Orenco at **800-348-9843**.

Orenco Systems®
Incorporated

Changing the Way the World Does Wastewater®

800-348-9843
www.orenco.com

Covered by patent numbers 5,492,635; 5,480,561; 5,360,556; 6,540,920; 5,531,894; D461,870; D445,476

NEHA Quarterly Report

By Regional Vice President, Region 2, Alicia Enriquez, REHS

NEHA held a successful conference June 25-28, 2006 in San Antonio, TX with over 1700 in attendance. It is always rewarding to meet new friends and reunite with colleagues from around the nation while attending educational conferences. I encourage all environmental health professionals to make the effort to attend the annual NEHA and CEHA conferences. These conferences provide opportunities to stay abreast of the latest technologies within the many environmental health disciplines, meet experts and network with colleagues facing similar issues. In addition to the conferences, there are many activities throughout the year. Get involved with both NEHA and CEHA, your professional organizations. Share your expertise by volunteering for one of the many technical committees, writing an article for the NEHA Journal or the CEHA Bulletin, or by submitting a presentation abstract for an upcoming conference. I guarantee that you will find it fulfilling and rewarding!

New 2nd Vice President
Congratulations are in order for Welford Roberts, Ph.D., REHS, of Virginia, the newly elected NEHA 2nd Vice President.

Headquarters. Effective July 2006, NEHA's headquarters has relocated and the new address is 720 S. Colorado Boulevard, Suite 1000-N, Denver, CO 80246-1925.

NEHA highlights and recent activities:

Legislation. HR 4167 is a bill that has recently been passed by the U.S. House of Representatives (National Uniformity for Food Act). NEHA opposed the bill. The bill has since moved to the Senate, where the support is thought to be more lukewarm. This law would remove the authority from local and state governments to require food safety labels (i.e. likely to cause cancer, birth defects, allergic reactions, mercury poisoning, etc.). This would also prevent states from passing laws regarding labeling requirements for genetically engineered foods. It will strip the local and state food protection programs of their statutory authority to remove contaminated foods from the market place and to regulate food service operations consistent with the circumstances of particular local communities. In particular, for California, it would rescind all Proposition 65 requirements related to food labels and warnings. California Senators, Barbara Boxer and Dianne Feinstein, have both opposed this bill.

Avian FLu/Focus Groups. During NEHA's AEC, the affiliate presidents convene to brainstorm regarding issues that greatly affect environmental health. At this year's conference in San Antonio, the topic was preparedness for Avian/Pandemic Flu. The questions discussed were:

- Does environmental health have a role in pandemic flu response?
- What are the basic functions you would expect environmental health professionals to play in pandemic flu response, no matter where your health department might be located? The purpose of this question was to identify the elements of an environmental health response that would be common to most health departments around the country.
- Are there any unique responsibilities that environmental health should have that would be different than anyone else's involved in a pandemic flu response?
- What other elements of the community should environmental health professionals be particularly well connected to and coordinated with?
- What roles and responsibilities in pandemic flu response would overlap with roles and responsibilities in emergency response in general?
- What roles and responsibilities in pandemic flu response (for environmental health) would be different and unique from any other roles and responsibilities that environmental health might have in overall emergency response?

The notes from the focus groups will be compiled and you will soon see information from these groups printed in an upcoming article in the NEHA Journal of Environmental Health.

Exams. New REHS/RS and Certified Food Safety Professional (CFSP) exams were offered at the CEHA AES recently held in Anaheim and the NEHA AEC in San Antonio. Item writing workshops were held in March 2006 in order to update the CFSP credential. Approximately one dozen NEHA volunteers assisted with this process. A terrorism/emergency preparedness element was added to the exam.

- The REHS/RS study guide has also been updated.

Membership. In January 2006, NEHA conducted an e-mail membership campaign (for the first time) and it has been successful so far. Last spring, membership was at approx. 4500 and it is now at 4814. NEHA is looking to add electronic tools and enhancements, such as online training, to attract new members and also to provide a benefit to members and other environmental health professionals.

Meeting Planning. In 2005, NEHA contracted with meeting planners, Prestige Accommodations of Southern California and they were instrumental in planning the recent AEC in San Antonio.

Credentialing. NEHA will soon apply to get the CFSP credential accredited through the American National Standards Institute (ANSI). At the recent NEHA Board of Directors' meeting in April 2006, the Board voted to:

- Retain the current CFSP (inclusive of eligibility requirements) and call it Tier 1 Food Safety Credential,
- Pursue accreditation of the Tier 1 Food Safety Credential,
- Develop a new Tier 2 CFSP Credential that will require a Bachelor's degree (or equivalent) and some definition of experience,
- Reaffirm the policy on the relationship between CFSP and REHS/RS but expand it to address both of the CFSP tiers.

A committee will be appointed by the Board and will be assigned the task of defining the details inherent in this concept.

For additional information, go to NEHA's website at www.neha.org or contact me via e-mail at EnriquezA@SacCounty.net

Resolution of the California Environmental Health Association

Honoring Mel Knight, REHS
Upon his Retirement from the County of Sacramento

WHEREAS, on August 25, 2006 Mel Knight will retire from the County of Sacramento with over 18 years of honorable County service and more than 37 years of combined State and local governmental service in the field of environmental health and protection; and

WHEREAS, Mel became a Registered Environmental Health Specialist in 1972 (#3632) and worked as a Sanitarian for Contra Costa County from May 1972 to November 1977 and for the California Department of Health Services from November 1977 to March 1984; and

WHEREAS, Mel assumed the position of Chief, Surveillance and Enforcement, Toxic Substances Control Division, California Department of Health Services in 1984; and

WHEREAS, Mel accepted a position with the County of Sacramento's Environmental Management Department in 1988, serving as the Chief of the Hazardous Materials Division, and in 1992, Mel was appointed as the Director of Environmental Health and Deputy Health Officer assuming responsibility for the Environmental Health Division; and

WHEREAS, Mel assumed the role of Director, Environmental Management Department in 1995; and

WHEREAS, Mel served as President of the California Environmental Health Association (CEHA) in 1982-83 and as an executive officer and President of the Northern and Superior Chapters; Mel is a recipient of CEHA's distinguished Vince Dunham Memorial Award, initiated the CEHA Northern and Southern Educational Updates that continue to this day, and has been an active member of CEHA since 1972; and

WHEREAS, Mel has served as President of the California Conference of Directors of Environmental Health (CCDEH), has chaired multiple policy committees and was a co-founding Board member of the CalCUPA Forum; and

WHEREAS, Mel has been an active Committee Chair and Board member for the National Environmental Health Association (NEHA), and is the only Californian to serve as the Chair of the NEHA Affiliate National Conference of Environmental Health Administrators (NCLEHA); and

WHEREAS, Mel is a published author, co-author of technical papers in numerous peer review journals and has been recognized for distinguished service to community charities, including the American Lung Association and the United Way-County Employee Campaign; and

WHEREAS, Mel has taught numerous courses and sessions to promote environmental health in the community, schools and in private industry, and is the recipient of the 1993 Award in Teaching and Outstanding Service in continuing Education from the University of California, Davis; and

WHEREAS, Mel is currently pioneering the implementation of a color-coded placard disclosure system for use in retail food facilities regulated by the County of Sacramento Environmental Health Division, the first of its kind in the nation; and

WHEREAS, Mel is looking forward to spending time with his wife, Diane, and his daughter, Melanie;

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the California Environmental Health Association does hereby honor Mel Knight for his dedication to environmental health upon the occasion of his retirement from the County of Sacramento and wishes him a fulfilling and healthful retirement.

ADOPTED BY THE CEHA BOARD OF DIRECTORS *July 15, 2006*

Darryl C. F. Wong

Darryl Wong, CEHA President 2006-2007

2006-2007 CEHA Board of Directors

CEHA is an organization dedicated to improving the quality of life and health through environmental education and protection. This goal, however, cannot be achieved without busy people serving in the various offices that help to run our organization. Without their dedication, CEHA would not exist. Please take time to let them know that you appreciate their dedication to CEHA, and to help them in any way you can. Their e-mail addresses are listed on page two of the Bulletin.

Back row: Tracey Ford-Rossler, George Nakamura, Mamerto Jorvina, Darryl Wong, Deborah Smith-Cooke, Laura Barnthouse, Darryl Yorkey. **Middle row:** Richard Harrison, David Leduff. **Front Row:** H. Taren Tseng, Melissa St.John-Harder, Mike Wetzel, Sophia Jella, Ann Marie Velazquez. **Not pictured:** Parvaneh Byrth, Paula Harold, Graciela Garcia, Greg Pirie, Ricardo Encarnacion, and Zarha Ruiz.

CEHA Has Lost a Champion
- Richard Forrest Wilson-

July 11, 1946 — June 9, 2006

On June 9th, 2006 a very dear friend of the CEHA family passed away after a long and courageous battle with cancer.

Rich began his career in environmental health with San Mateo County in 1970. Although he briefly worked in the small water system program, he really loved the broad duties that he performed as a REHS generalist. One of Rich's greatest achievements was his lead role in the successful sewering of the Emerald Hills/Lakes project in 1977 – 1982.

In 2000, Rich began working in the Santa Cruz County EHS Land Use Program, and was later joined at the county by his second wife, Kathryn Conley, also an REHS.

Rich's experience and knowledge of the onsite wastewater treatment field led to his chairing of the CCDEH Land Use Technical Advisory Committee. He also represented both CEHA and the Land Use TAC throughout the entire AB 885 statewide onsite wastewater regulation promulgation process. Rich was the right specialist to be in this critical position. There were many disagreements on not only what the regulations should cover, but specific language as well. What generated the most furor in CEHA, however, was when the REHS registration was questioned by the State staff as to it's professionalism in providing the oversight of future onsite wastewater regulatory programs. It was Rich Wilson who led the immediate rebuttal to this assumption. Acting as a constant and abiding advocate for the REHS profession, Rich didn't give up until the REHS profession was added back into the regulations as an essential part of the future onsite wastewater treatment regulatory program.

Rich has been active in CEHA for much of his career as a REHS, serving in numerous local offices including President of the Northern Chapter, and as the CEHA Program Chair for 2005 CEHA AES held in Monterey. Rich has always been known over the years in CEHA for his constant efforts to promote the field of environmental health, and for his willingness to lend a helping hand where needed.

Born on July 11, 1946 to Margaret and Charles Wilson., Rich was the younger brother of Don Wilson. After completing his tour of duty in the Navy, Rich married his first wife Randi. They had four children. Rich graduated in 1968 from Hayward State College with a degree in Biological Sciences.

He will be greatly missed by his wife, Kathryn Conley Wilson;, his daughter, Amanda; and his three sons, Richard Jr., Jon and Terry; as well as his many other friends and family. Rich, as many of us knew him, was very moved by the constant flow of friends and family during his last days and was happy that he was able to say his goodbyes to so many.

Rich didn't have to roar to be heard. Those of us who were lucky enough to have had even a small connection with Rich truly know what an inspiration he was to all of us.

California Environmental Health Association

Redwood Chapter

presents the

2006 Northern Update
Exploring Environmental Health

October 12, 2006
Hilton Sonoma Wine Country

~more than 28 educational sessions~

With continuing exploration and adventures
October 13, 2006

~through your choice of 5 unique training opportunities~

Exploring Environmental Health

CEHA REDWOOD CHAPTER NORTHERN UPDATE & TRAINING
OCTOBER 12 & 13, 2006
Hilton Sonoma Wine Country
Santa Rosa

Join us for a jam-packed day exploring 28 exceptional educational opportunities. Come the night before, as your day will start early with a full vineyard breakfast and welcome to scenic Sonoma County ! Lunch will find you dining in the ballroom or on the terrace high on a hill overlooking Santa Rosa and the coastal mountains. After a stimulating day of learning, unwind in the hotel lounge with complimentary wine tasting. Get plenty of sleep, though, because your adventure continues the next day with your choice of 5 adventures in training:

1) Land Use and Watershed from a hot air balloon (includes brunch, pin and commemorative Certificate of Ascension). Weather dependent. Fee $$$.
2) Food Safety as a Primary Ingredient—Santa Rosa Junior College Culinary Arts training academy (includes continental breakfast). Fee $.
3) Food, water and waste—Private winery processing tour & harvest luncheon (of royal proportions!) with the owner and staff. Fee $$.
4) Building "Green" Communities – Town of Windsor tour emphasizing the benefits of building & planning "green": durability, ease of maintenance, energy and water consumption reduction, efficient re-use and recycling of materials, lower greenhouse gas emissions, and better indoor air quality. FREE!
5) Biosolids, composting, recycling & energy production – a tour of Sonoma County's premiere solid waste facility and state-of-the-art sewage plant, led by IWMB award winner Bob Swift. FREE!

EXPLORE WITH US! REGISTRATION FORM & DETAILS AT WWW.CEHA.ORG

California's REHS Program Update

Registered Environmental Health Specialist Program News

By Margaret Blood, REHS Program Administer

The proposed regulations for continuing education are currently being reviewed by the Office of Regulations, California Department of Health Services (CDHS). The public comment period will not be scheduled until the regulation package has been approved by several state control agencies including the Office of Administrative Law. We will keep you informed on the progress of the regulation package through the California Environmental Health Association (CEHA) Bulletin and CDHS internet page. In the meantime, the regulations enjoy strong support from the Environmental Health Specialist Registration Committee, CEHA and the California Conference of Directors of Environmental Health (CCDEH). As the continuing education regulations are refined through the review process, we are developing a draft implementation plan in order to have the stakeholders identified and goals and objectives made clear.

Senate Bill 1759 has been amended to provide additional funding for the REHS Program and includes increased fees for biennial registration renewal, new applicants, and examinations. Fees from the proposed increases will be used to support the continuing education requirement. This bill will also add a provision for criminal record investigations for applicants seeking registration as an environmental health specialist.

Four of the five environmental health university programs have been reviewed and received approval from the CDHS.

California State University, Northridge - Approved

California State University, San Bernardino - Approved

Loma Linda University - Approved

California State University, Fresno - Approved

The University of California at Los Angeles is scheduled for review this year.

California State University, Chico faculty has submitted a proposal to CDHS to establish a new environmental health program. The proposal will be shared with the Environmental Health Specialist Registration Committee - Education Subcommittee for review and comment.

CDHS maintains a database of REHS applicants that meet the minimum education requirements starting with applicant's letters dated July 2003. These applicants have received their certification letter and are eligible to work as trainees. We can provide their mailing labels, sorted by zip code or alphabetical, for a fee of $50. Currently we have over 900 individuals in this database. In April we sent out a survey to 500 applicants who have received their certification letter between January 2005 and April 2006; we received 155 responses. We are analyzing the responses to determine why there are so many certifiable applicants and yet some counties have difficulties with recruitment.

REHS program staff participated in the CEHA Annual Educational Symposium in Anaheim by helping to arrange and promote the Student Forum. The Forum was a great success with presentations by Brenda Faw, Director of Tuolumne County; Todd Frantz, Food Safety Manager at Disneyland; Christine Graulau, Hazardous Waste Program Manager for the US Navy; and Janis McBride, Supervising Environmental Health Specialist in Orange County. Staff also presented on the topic of Ethics with a discussion of the existing legal restrictions for Registered Environmental Health Specialists and the limits of the statute.

The current listing on the REHS web site of active REHSs was posted in April. The list includes the name, REHS # and expiration date for all current and active REHSs. There are 3062 on the active list.

Training Coordinator meetings are facilitated by CDHS two or three times a year. Currently the group is developing a comprehensive outline of the information needed by a new REHS. The process involves using the knowledge and skill statements developed during the job analysis as a starting point and expanding on them until a complete description of the program responsibilities emerges. An outline for the Food and Consumer Protection program was developed at the October 2005 meeting. Inspections & Investigations and Recreational Health were drafted on May 8, 2006 at the AES. General science and drinking water will be addressed this fall.

The Registered Environmental Health Specialist exam is continually updated by adding new questions and revising existing questions. Two groups of experienced REHSs (Subject Matter Experts) were convened in March 2006 in Los Angeles and Sacramento to review, refresh, and revise test questions. Panels will be held again in the fall. If you are interested in participating submit your resume to:

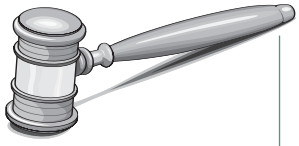
California Department of Health Services
Environmental Health Specialist
Registration Program
Subject Matter Expert Panel
MS 7404
P.O. Box 997413,
Sacramento, CA 95899-7413

If you have any questions, please contact Margaret Blood at (916) 552-9991.

The Editorial Committee wishes to thank all of you who contributed pictures for this issue of the CEHA Bulletin.

Board of Directors Highlights

By Mike Wetzel, Secretary



Some time has passed since our last Board Highlights and Bulletin. Since then CEHA has been able to build up our volunteer force and an active Board of Directors have been busy with business of CEHA. This should be great year for CEHA and I look forward to my involvement on the Board.

January 2006 Meeting

- The scholarship fund was low due to lack of donations. The Citrus Chapter offered to use their EHS Cookbook fundraiser for the scholarship fund to insure awards could be made.
- The board was directed to circulate an AES promotional DVD to promote attendance.
- The Board is seeking nominations for the Walt S. Mangold award.
- The Radisson in Sacramento was approved for the AES 2007 site.
- The Nominations and Elections Committee will be sending out ballots with platform statements.
- The new Masthead for the CEHA Bulletin was approved.
- The Redwood Chapter will host the 2006 Northern Update.
- The Superior Chapter to refer to Lake Tahoe RFP's for 2007 Northern Update.
- Board seeking Traveling Seminar chairperson.

May Meeting

- The newly elected chapter presidents were given tasks to complete during their term.
- Public Relations Committee to develop public out reach work plan on the importance of continuing education requirements for REHS's.
- The Chapter Presidents are to contact three educational institutions in their region regarding Environmental Health.
- The Chapter Presidents are to survey their chapters to determine needs.
- The Chapter Presidents to take information to and from their chapters.
- The Chapter Presidents to use and maintain their chapter website on the CEHA site.
- Chapter Presidents to host at least two face-to-face meetings this year.

July Meeting

- President's main goal is to build up membership numbers to meet the goals set in the May meeting.
- New Webmaster is to be found that can revamp web site and keep it current.
- The Board approved Dorothy Janse as the Technical Sections Chair.
- Discussed the language of Continuing Education and REHS fee increase SB 1759 bill. CEHA still supports the bill at this time.
- Every Chapter submitted a Chapter report. First time in long time. Thank you to Ann Marie Velazquez, Central President for reviving our Central Chapter.

CEHA Corporate Members

Garrison Enterprises Inc.
P.O. Box 690426
Charlotte, NC, 28227
(704) 569-0801
contact: Cameron Garrison
2006 AES Bronze Sponsor

Mars Air Doors
14716 Broadway
Gardena, CA 90248
(310) 532-1555
Contact: Dana Agens
www.marsair.com
marsinfo@marsair.com
2006 AES Silver Sponsor

Same Day Distributing, Inc.
5692 Buckingham Dr.
Huntington Beach, CA 92649
Outside Orange & LA Counties
(714) 379-2060
(800) 735-2261
Contact: Susan Hicks
www.same-day.com

Taylor Technologies
31 Loveton Circle
Sparks, MD 21152
(410) 472-4340
Contact: Tom Metzbower
www.taylortechnologies.com

Underwriters Laboratories Inc.
333 Pfingsten Road
Northbrook, IL 60062-2096 USA
(847) 664-1579
Contact : Jim Dingman
james.d.dingman@us.ul.com
www.ul.com/regulators

Western Exterminator
305 North Crescent Way
Anaheim, CA 92801
(714) 517-9000 x148
Contact: Jesse Fulton
www.westernexterminator.com
2006 AES Silver Sponsor

CEHA Calendar of Events

September 5-7, 2006
CIEH annual conference;
Bournemouth International Centre, England;
http://www.cieh.org/events/2006_conference.asp

September 25-29
2006 Annual CCDEH Conference, Dana Point

October 11 - 12, 2006
CEHA Northern Update, Sonoma Hilton;
3555 Round Barn Blvd. Santa Rosa, CA 95403

October, 2006
CEHA Board of Directors Meeting
9:00 am - 4:00 pm, Palm Springs

November 22 to 24, 2006;
John Stirling, President of Royal Environmental Health Institute of Scotland, is delighted to announce that this year's Conference will be held for the first time in Glasgow at the Glasgow Menzies Hotel, 27 Washington Street.
www.rehis.org

January 20, 2007;
Board of Directors Meeting - Location to be determined

April 7, 2007
World Health Day http://www.who.int/en

April 24-27, 2007
56th AES, Radisson Hotel and Spa, Sacramento, CA

April 24, 2007
Board of Directors Meeting – Sacramento 1:00 - 5:00 pm

April 28, 2007
New Board of Directors Meeting,
Sacramento 9:30 am to 4:00 pm

June 18 – 21, 2007
NEHA's 71st Annual Educational Conference, at the Tropicana Hotel ($119 room rate), Atlantic City, New Jersey

Please Note: CEHA has a new mailing address. The new address is:
110 South Fairfax Avenue, #A11-175
Los Angeles, California, 90036

The new phone, fax and email are:
(323) 634-7698 Phone
(323) 571-1889 Fax
support@ceha.org

Please visit the CEHA website at www.ceha.org

California Environmental Health Association
110 South Fairfax Avenue, #A11-175
Los Angeles, California, 90036

Address Service Requested

PRESORTED
STANDARD
US POSTAGE
PAID
PITTSBURG, CA
PERMIT NO. 130