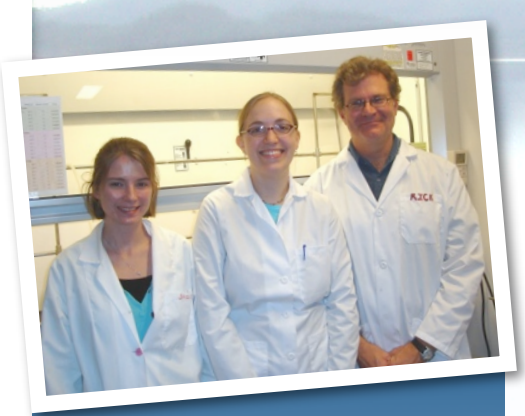
SOUNDCITIZEN

www.soundcitizen.org



# Salutations Sound Citizens!

Thanks to all our volunteers for being a part of SoundCitizen's success in its first year. Since November 2008, we have distributed hundreds of kits to volunteers and school groups. Sixty percent of you returned your water samples. You collected water throughout the Puget Sound region, as well as in some surprising locations as varied as Arkansas to Alaska. Without your enthusiasm, SoundCitizen would not have survived, and for that, we sincerely thank you. Despite a few bumps in the road — unexpected breakdowns in laboratory instrumentation, long waits getting samples in the mail and through the processing mill, and the inevitable delays around exam and term paper time — I think our undergraduate "Spice Girls" have done a phenomenal job running the program. To those of you who asked for hundreds of kits, maybe one day we will be able to accommodate your requests. In the mean while, we still have smaller numbers of kits available, so check us out at www.soundcitizen.org.

**"I think our undergraduate "Spice Girls" have done a phenomenal job running the program"**

Spice Girl Three

*--Rick Keil, Faculty Mentor, Associate Professor & Fleming Fellow for Ocean Education*

Spice Girl One

Spice Girl Two

## The SoundCitizen "Spice Girls"

SoundCitizen runs on the talents of four undergraduates Britta Voss, Allison Myers-Pigg, Anna Belcher and Harriet Cole, and the strength of recent UW alumni Brittany Kimball and Jaqui Neibauer. Throughout 2009, Allison, Britta, Anna and Harriet kept you supplied with kits and processed returned samples. You have probably received an e-mail or two from Brittany, who oversees the program. Jaqui watches over the laboratory. This summer we said goodbye to Britta, Anna and Harriet. Britta is now a graduate student at the Woods Hole Oceanographic Institute, and our exchange students Anna and Harriet returned to the UK to finish their degrees. Expect some new faces around SoundCitizen in the next year—maybe we will even gain a spice guy in the lab!

Spice Girl Four

Spice Girl Five

Spice Girl Six

Spice Girl Seven

# Everything You Wanted to Know About the Origins of SoundCitizen!

***By: Britta Voss***

The roots of SoundCitizen trace back to the curiosity of University of Washington oceanography students during a research cruise in Puget Sound in 2006. As students pondered the proximity of their study site to densely populated urban areas, Professor Keil posited that if they tried, students could use cooking spices to directly link everyday activities to the chemistry of Puget Sound. The students' immediate response was, "Let's do it!" and "The Spices Project" (now called SoundCitizen) was born—looking at the occurrence of compounds people use every day in the waters of Puget Sound. Professor Keil's lab was already equipped with the necessary equipment, and so Jaqui Neibauer and Kimberly Genther set about developing the methods of water collection and purification that have become the cornerstone of SoundCitizen.

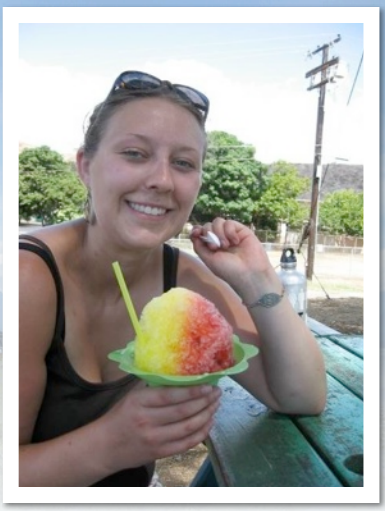
Why spices? First, the wide variety of spices that could be measured offered a window into multiple aspects of human activities. Each spice tells a different story. Thyme is only detectable in Puget Sound after Thanksgiving. Natural vanilla from orchid pods (vanilla beans) and other natural sources is readily observed during the holidays and in the spring. The synthetic spice ethyl-vanillin, which is found only in artificial vanilla, is abundant in Puget Sound year-round, and another unusual spice veratraldehyde (tastes like caramel corn) is abundant only in summer. Second, spices are a great way to foster awareness of the human link to Puget Sound. People seem to identify with the spice project because spices are fun and an intrinsic part of everyday life.

The spices project began in fall 2006 with weekly samplings of about five gallons (20 liters) of treated sewage effluent from the West Point Sewage Treatment Facility in Seattle. By 2007, the project expanded to include local rivers, and public interest was high. The lab team devised new techniques to get the sampling requirement down to much less than five gallons, and we began dreaming of a network of friends and family collecting samples for us. Our first kits were in little plastic boxes and used only by students and friends. Then in fall 2008 we rolled out our idea of citizen volunteers at a Center for Ocean Sciences Education Excellence (COSEE) event held in Seattle. The response was overwhelming! Since then, SoundCitizen has grown from a dream to a wonderful collaboration between UW students and more than 200 volunteers. We now conduct research on more than twenty spices and many emerging pollutants. Thank you for helping and supporting us in our research.

**"Spices are a great way to foster awareness of the human link to Puget Sound"**

## Our Mission Statement

SoundCitizen is committed to involving citizens and undergraduate students in high-quality research about the connections between land and sea. SC encourages volunteers at all age levels and helps its members understand the scientific findings through education and outreach programs.



Umm... Shaved Ice

## Our Featured "Spice Girl" – Britta Voss

*Interviewed By: Allison Myers-Pigg*

The Spice Girls keep SoundCitizen running on a daily basis. They are the undergraduate students who work on the project. Between making, sending and receiving kits, and data analysis and interpretation, there is always something to keep them busy. Britta Voss has been working on the project almost since day one. She headed out this last summer to start graduate school at Wood's Hole Oceanographic Institute in Massachusetts, but before she left, Britta was interviewed by SoundCitizen's fellow undergraduate Allison Myers-Pigg.

**Allison:** Sitting down to interview one of my close lab mates for this newsletter seemed a little funny – the formality of it anyway. One can probably infer the fun-loving nature of our lab based on our project, but Britta's comedic attitude, wearing her sunglasses indoors, and the announcement of 552= 3025 pretty much epitomizes our lab's attitude – fun with a twist of seriousness. Discussing her thoughts and impressions of the lab through the years really paints a picture of the evolution of the program. Britta Voss, a born and raised Seattleite, loves the Puget Sound area. She wasn't always set on majoring in oceanography or heading off to graduate school to study water for that matter. In fact, she didn't even consider oceanography until one day when she was ambling around campus as a young freshman and the idea fell into her head. The rest is history. Four years later she is bound for the East Coast for graduate school. But before she left, I had to ask her some very important questions about what it's like to be Britta.

**Allison:** So, since we work with spices and other chemicals, which one would you be?

**Britta:** "Well, I would be cumene because it's delicious, and I love Mexican food."

**Allison:** What's your least favorite spice?

**Britta:** "It would have to be caraway, because it tastes nasty to me."

**Allison:** Why did you join the lab team?

**Britta:** "I wanted to work for Rick Keil because he is a great teacher and very enthusiastic about bringing current issues to oceanography education and the spices project he was starting sounded interesting. The lab has evolved so much in the last two years since I've been here."

**Allison:** For example…

**Britta:** "The spices project really took off from a 'fun and interesting' stage through a 'spread the news' stage to a serious study of our connected world. We study so much more than spices, and it's really cool that we get to involve the general public."

**Allison:** What are you going to study over there at Wood's Hole Oceanographic Institute?

**Britta:** "Haha, I just spent the last four years thinking I'd study the ocean, but now I'm going to study rivers and the chemicals in them. But hey, rivers are important for the ocean too."

**Allison:** So, you're leaving for graduate school. What are you going to miss most about the lab?

**Britta:** "My favorite things; the fun-loving atmosphere, and the fact that we are getting everyday citizens excited about science."

**Allison:** And finally, what won't you miss about the program?

**Britta:** "Rick! No, seriously, I'm going to miss everything."

**"We are getting everyday citizens excited about science"**

## Featured Volunteers

**Kailey Genther:**
**Scientist and Educator**

Kailey Genther is an original spice girl. SoundCitizen started after she left the lab, but she was among the first SoundCitizen volunteers. She has collected samples of varying types from differing locations in the Pacific Northwest and has told us one of the most entertaining stories involving sample collection (while her boyfriend craftily captured the moment on camera)! This story is detailed below:

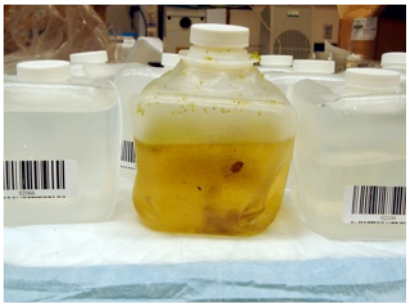
Two of her spring samples for SoundCitizen were gathered during an awkward moment in life — meeting the potential in-laws for the first time. Kailey, Sam and his mother were on a trip to Forks, WA when Kailey decided to collect a sample from Crescent Lake. Sam's mom was quite confused — what was Kailey doing collecting a small bottle of water from the lake and dunking strange little test strips into it? When Kailey finished with her sample, she 'got all nerdy' and explained her involvement with SoundCitizen. The most embarrassing moment occurred during the collection of her second sample — she was very excited to be on the beach and ran into the water to gather an ocean sample, but was quickly chased out by a big wave. She later admitted that it was dumb to run so deep into the water. It all ended happily, however, with an approving hug and kiss on the cheek from her potential future mother-in-law and some very unique samples!

# Environmental Spices: 2008-2009

SoundCitizen's first year of community sampling was successful and helpful for UW scientists. We are developing a much better understanding of the natural cycle of spices in the Puget Sound Region. In addition to coming from the foods we eat, spices are a natural component of our environment. Many plants make spices, especially during flowering. For example, while we generally consume cinnamon that comes from the bark of the tropical cinnamon tree, many plants in our region create small amounts of cinnamon in their bark, or in their flowers. The hundreds of samples we received from different watersheds allow us to resolve where and when spices move from land to the sea. This is potentially useful information for at least two reasons. First, it allows scientists to determine how long it takes for natural and seasonal changes in a watershed to be reflected in the stream or in the receiving waters (lakes, Puget Sound). This is helpful for comparing natural change to human-caused changes that might result from things like deforestation or construction. Second, many clues about the Earth's past are buried in lake and ocean sediments. Scientists can extract chemicals and then determine what an environment was like in the past. This also provides clues to how an environment might shift in the future. Our world is rapidly changing and a better understanding of our past is one key to finding a sustainable future.

# Household Consumer Chemicals 2008-2009

SoundCitizen has expanded its chemicals list to include some chemicals commonly found in household consumer products. Like spices, many other chemicals are naturally found in low quantities because plants make them. They may smell or taste nice, making them popular additions to products such as soaps or laundry supplies, dishwashing detergents, all-purpose cleaners, hand sanitizers, personal care products (lotions, fragrances, cosmetics), deodorizers, and baby products. Unfortunately, at the higher concentrations sometimes used in products, these compounds can become toxic, leading to adverse human and environmental health effects. Along with our collaborator Professor Anne Steinemann (UW Civil and Environmental Engineering) and with a small grant from Seattle Public Utilities, SoundCitizen has been evaluating more than two dozen consumer chemicals in our local waters.



**Nathan Winter:**
**Environmental Scientist and Middleschool Student**

Nathan Winter is a twelve-year-old student at Mountainview Middle School in Bremerton, Washington and has been requesting kits since the very beginning. Both Nathan and his mom, Roberta, spend a lot of time along the shores of Puget Sound. They got involved in SoundCitizen as a science project for Nathan's school. Given their close proximity to the beach at Dyes Inlet, they decided to take saltwater samples during both calm and stormy days to investigate the impact of storm water runoff on the Sound.

Due to the weather conditions of the winter months in 2008, there was not as much rain as they had hoped, but that did not stop them from being scientists and gathering data in spite of the circumstances! Their sample collections went great except once when Nathan forgot to mark the weather conditions on his datasheet. Ultimately, they discarded that sample but they were still able to collect five samples in total and observed interesting trends in their water. They noted an increased ammonia concentration following a storm which they believed demonstrated pressure on the sewage plants, as well as a less acidic pH due to rainfall. Nathan performed exceptionally well on his science project! Congratulations Nathan!

### Miller/Walker Creek Stewards

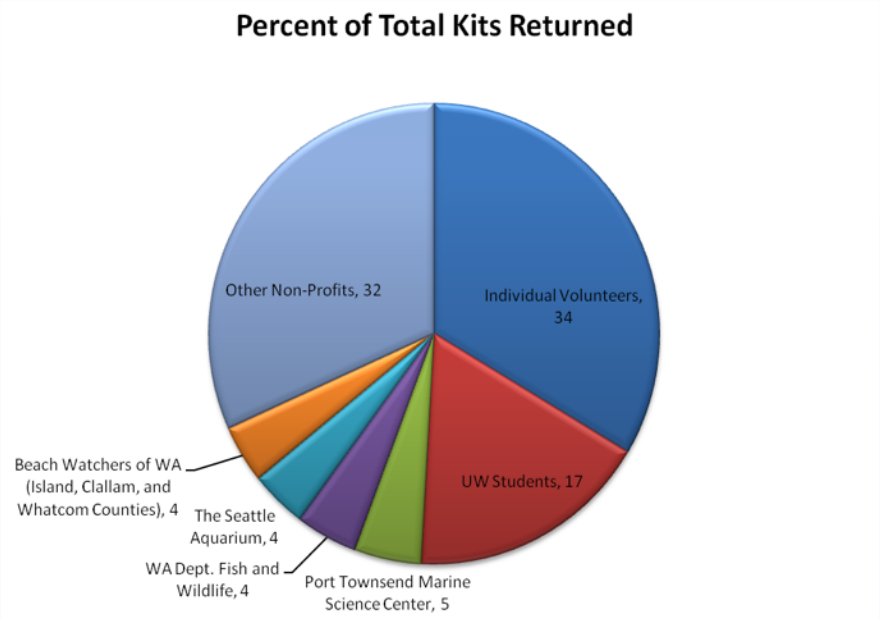
**Written by: Dennis Clark**

The Miller/Walker Creek Stewards (Kevin Alexander, Tony Cassarino, Dennis Clark, Dave Evans and George Hadely) are one of the many concerned local watershed groups that have made SoundCitizen sampling a collective effort. Miller and Walker Creeks drain an area of nine square miles in the cities of Burien and Normandy Park near SeaTac Airport. For the last five years, people in the basin have been working to restore stream habitat. In the fall of 2008, when SoundCitizen began publicizing its environmental sampling program, there were many people in the community who recognized the value of the program and were eager to learn more about the health of their streams and their relationship to Puget Sound. Thus far, they have collected approximately 20 samples for SoundCitizen.

*Kevin* volunteers for Seahurst Park (and coordinates a monthly invasives removal work party), works with the Environmental Science Center, Sustainable Burien, and helps with the projects for Miller/Walker Creek Basin. Tony is a founder of the Stewards of the Cove volunteer program, started in 2004 focusing mainly on in-stream habitat improvements and wetlands restoration. He has also been active with the Normandy Park Community Club's Salmon Habitat Restoration Project at the Cove. Dennis is the Miller/Walker Creek Basin Steward. He is employed by a partnership of local governments to help basin residents take care of the aquatic resources in Miller and Walker Creeks, so SoundCitizen is a great fit! Dave is another long-term member of the Stewards of the Cove. He has participated in other stream monitoring including measurements of physical habitat parameters on Miller Creek in 2008. George serves on the Normandy Park City Council and is a long-time steward of the streams. George has participated in the King County Salmon Watcher program and the Washington State University Watershed Steward Program.

# The SoundCitizen Community for 2008-2009

Thanks to our community for your passion about the environment and your actions through SoundCitizen.




You can see that primarily, the samples have been collected by people associated with organizations such as: the Washington State University Beach Watcher Program from three different counties (Island, Clallam and Whatcom), the University of Washington, and the Miller and Walker Creek Stewardship. One other thing to note from this graph is that the majority of samples have come from people who declare themselves as citizens or from smaller organizations. We think that it is amazing how many people have gotten involved in this program. Since we are constantly looking for more eager citizens to lend a hand, participate, and make changes in today's world, don't hesitate to spread the word.

# SoundCitizen Funding

In addition to all our volunteers, here are a few organizations that have contributed to Sound Citizen:

- Generous donations to the Richard Fleming Endowment were used to kick-start the program;
- Seattle Public Utilities funded a portion of our research on consumer products and emerging pollutants in King County;
- The College of Ocean and Fishery Sciences has supported us by offering in-kind services including the design of our snazzy logo.
- Washington Sea Grant provided logistical support and help with our business plan.
- COSEE-Ocean Learning Communities helped hatch the program and has provided intellectual and in-kind capital.

If you would like to offer a tax-deductible donation to SoundCitizen please visit us on the web at: soundcitizen.org and click on the link titled "**Donate Now**".

## List of Organizations that help SoundCitizen

Beam Reach
Blaine PEO/Jana Turner
Citizens for Protection of Useless Bay
City of Edmonds, RP
COSEE-OLC
Deception Pass State Park
Des Moines Elementary School
Duwamish River Cleanup Coalition
Earlington Hill Neighborhood
Environmental Science Center
iSchool
King County
Maywood Middle School
Olympic Coast National Marine Sanctuary
Puget Sound Skills Center
Shannon Point Marine Center
Sound Experience
Stewards of the Cove
USGS-BRD
WDFW
Edmonds Beach Docent
Harbor Wild Watch
Mountainview Middle School
ReSources
Western Washington University
Enumclaw Middle School
NWEI
Beach Naturalist
Stadium High School
PTMSC
The Seattle Aquarium
Eastside Earth Education
Miller and Walker Creek Stewardship
University of Washington
Beach Watchers of WA (Island, Clallam, and Whatcom Counties)

## List of Individual Volunteers (November 2008 – September 2009)

Ted Ackerley
Kevin Alexander
Gail and Bob Alexander
Nikki Anderson
Andrea and Callie Anderson
Karen and Ben Andres
Stewart Atkinson
The Avila Family
Lisa Balton
Tershera Barr
Marisa Barrle
Anna Belcher
Philip Bell and Family
Kevin Blair
Michelle Blar
Steve Blye
Claire Boudour
Karen Boyd
Melvin Breitsprecher
Bob Brenner
Barbara Brock
Dave Brubaker
Janet Bruening
Susan Bullerdick
Laurne Burman
Bob Campbell
Jessica Canfield
Nanette Cardon
April Carr
Tony Cassarino
Erin Cassidy
Bonnie Chang
Chris Chickadel
Jim Christensen
Dennis Clark
Tansy Clay
Penelope Clay
Harriet Cole
Noëlle Congdon
Wm. A (Tony) Cook
John Custer
Brenda Danner
Esther (Soozie) Darrow
Dan Darrow
Rosette Dawson
Donna Dell
Paula Delucia
Allan Devol
Paul Dinnel
Audrey Djunaedi
Pete Domoto
Bob Donegan
Carolann Driver
Jon Eden
Chestine Edgar
Nancy Elder
Ann Elliott
Dan Fisburn
Amanda Fonville
Chris Frazer
David French
Heather Galindo
Gail Garmen and Richard Fleming
Kailey Genther
Carol Gillespie
Bruce Glundberg
Rhoda Green
Cathy Hackett
George Hadley
Monica Halverson
Robert Hammer
Frank Handler
Sydney and Saylor Hansen
M. Hargrove
Barbara Henon
Shane Hollrah
Cherie Holman
Frank Hughes
David Hyde
Alex Ingalls and Family
Claire Jacobs
Anna Jacobs
Cynthia Jayne
Patricia Jorgensen
Jarett Kaplan
Rick Keil and Family
Sarah Kele
Colleen and Jonathan Kellogg
Sammye R. Kempbell
Sean E Kennedy
Brittany Kimball
Jacqueline Laverdure
Bob Lemon
Monique Leslie
Allison Linnell
Miles Logsdon
Adam Lorio
Brooke Love
Pam Lowry
Rebecca Mars
Karen Matsumoto
Kelsey McDuffee
Xenia McGowan
Joshua McNichols
Tom Miller
Pat Moore
Elizabeth Morin
Joyce Murray
Fran Murray
Liz Myers
Allison Myers-Pigg
Brooke Nelson
Janet Oja
Lara Okoloko
Margie Ostle
Barbara Owens
Emily Paauw
Tom and Vicki Perry
Devin Peters
Merry Ann Peterson
George Pigg
Katie Postlewait
Lisa Renoe
Anton Resing
Betsy Robins
Doug Rogers
Alison Rogers
Leslie Rome-Nagata
Lane Rowell
Wendi Ruef
Stan Rullman
Marsha Savery
Sharon Schlentner
Judi Schwarz
Fred and Margaret Schwender
Eric Shen
Joel Shrut
Craig Shubin
Grace Silver
Cari Simson
Terry Skorheim
Brit Sojka
Jean Spohn
Jade Stair
Don and Jody Stanwyck
Doug Stark
April Swansiger
Jeff Taylor
Virgina Thompson
Susan Tyler
Daniel Van der Elst
Scott Veirs
Mike Vignal
Britta Voss
Jean Walat
Nick Ward
Joe Weiss
Gary West
Ashley Wheeler
Nathan Winter
Shuang Zhang
Jon Zintel

# Announcements

**Call for photos and stories!**

Have you ever wanted to be featured in a paper, newsletter or website for your dedication, hard-work, and zest? Well, here's your chance! SoundCitizen is currently looking for your stories and photos! We are requesting anything and everything from collecting your sample, to performing your strip test analyses, and even ones of you just being goofy and having fun! E-mail your photos and biographies to: info@soundcitizen.org.

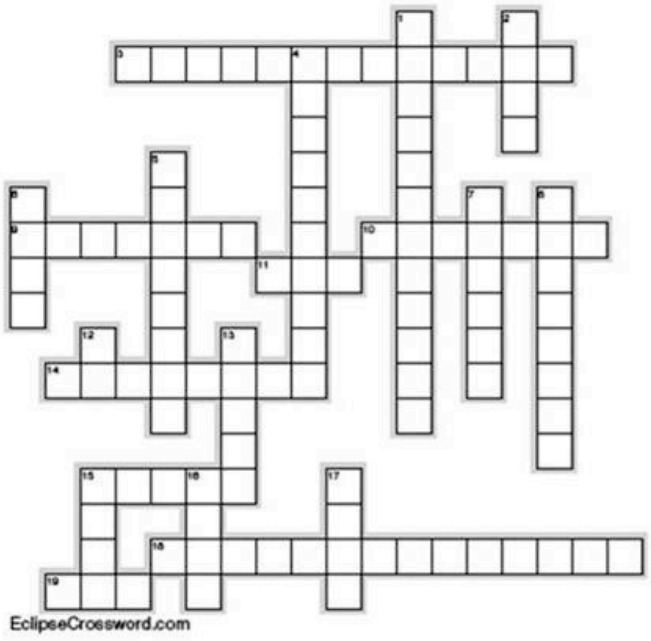
**"What's happens to a kit after I mail it?"**

Have you ever wondered what's happening to your kit once you put it in the mail? We have created a link on our website that provides you with a complete run-down of sample analyses back in the lab. Go to: www.soundcitizen.org and click on the link titled: "Our Current Progress" in the main menu tab.

**"How can I get my data?"**

The test strip data you submit to SoundCitizen is available on our web site. Click on the 'Results' tab on the upper right side of the page. You can make maps and download data to Excel. Spice and Pollutant data is available to you by request. We had originally intended to post the spice and pollutant data on our web server for the general public. However, legal concerns over possible data misuse and abuse by persons with a personal or political agenda (which would violate the intent of SoundCitizen) prompted our current policy of 'spice data by request'. SoundCitizen can provide you with interpretations of the data you helped collect, and provide the raw data as well. Please email Brittany at Brittany@soundcitizen.org for more information.

# Crossword Puzzle




## Fun Facts About SoundCitizen!

### Across

3. Which is synthetic: Ethyl Vanillin or Vanillin?
9. What chemical attribute do you test for in the field that onyl has one pad on the strip?
10. Which test do you have to wait 60 seconds before reading from the test strip?
11. Do you have to try and fill the bottle as full as possible?
14. When do we primarily see spikes of spice concentrations in Puget Sound?
15. What spice do we investigate that is in Thanksgiving stuffin?
18. Which Spice do you consume: Cinnamic Acid or Cinnamaldehyde?
19. How many seconds do you hold the ammonia strip in the water?

### Down

1. Which spice comes out of your body after you consume it: Cinnamic Acid or Cinnamaldehyde?
2. Who is the chief scientific liaison for SoundCitizen (first name)?
4. SoundCitizen would not exist without its _____.
5. Which spice is more expensive in grocery stores: Ethyl Vanillin or Vanillin?
6. Be a _____ sampler.
7. Who, from SoundCitizen, is graduating this year and is going to Wood's Hole for graduate school (first name)?
8. What group of people runs and organizes SoundCitizen?
12. Do you have to rinse the bottle before collecting your sample?
13. True or False? We do not want samples over the summer.
15. True or False? Spices are benign. As far as we know, they have no negative impacts on the environment.
16. How do the samples get back to the lab at the UW?
17. What machine do we use for the final analysis of the samples back in the lab?

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Anytown, State 54321

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