Solar Water Heater SEEDKIT Webinar
March 30, 2010

OPERATOR: Good morning and welcome to today's Solar Water Heater SEEDKIT Webinar. At this time I would like to turn the call over to Ms. Love Zubiller for opening remarks and introduction.

LOVE ZUBILLER: Good morning everyone, good afternoon and good evening. Thanks for your interest in the Solar Water Heater SEEDKIT. We're happy to have you with us here this morning.

My name is Love Zubiller and I'm the volunteer coordinator for SEED. Our goals for the next 20 to 30 minutes are to provide a brief introduction to SEEDKITS; show and tell you more about the Solar Water SEEDKIT; discuss how to hold a SEEDKIT workshop at a school near you; demonstrate how volunteers like you can order this SEEDKIT; and answer any questions you might have about SEED, SEEDKITS, and the Solar Water Heater.

This webinar is interactive and we want to hear your thoughts throughout the program. We might ask you a question during the webinar and you can answer it by raising your hand. You can also type a message into the "chat" box down here.

This may be your first time participating in a SEEDKIT webinar and I want to tell you a little bit about SEEDKITS themselves before we get started. SEEDKITS are based on three important elements within the SEED program and its culture. First, the content for the SEEDKIT is derived from the content on our web site, which as you may know, was written by our own volunteer science experts. Second, the model for the SEEDKIT is based on SEED workshops. Our success in engaging teachers and students with technology have paved the way for us to create these SEEDKITS. And finally, you--our SEED volunteers--are the channel to bring these SEEDKITS to students and teachers everywhere. Without your participation, our efforts would be fruitless.

What is a SEEDKIT? A SEEDKIT contains the materials and guidance needed for any volunteer to lead a workshop at a local school or a teacher to teach a class. But why stop there? Volunteers can also use these tools with your own kids or with anyone who is interested in science. Each SEEDKIT has instructions and training materials so that any volunteer, scientist or not, can feel confident in the material and can deliver a workshop at a school. And, all the materials are available in seven languages including Arabic, Chinese, English, French, Portuguese, Russian and Spanish.

I hope everyone here is a registered volunteer. If not, please visit our web site and complete the registration form. It only takes a few minutes of your time. Even better, you can invite your friends to volunteer and to attend our next webinar which will be announced soon.

Now I'd like to introduce everyone to Claudia Urrea, our Educational Technology Expert at SEED. Some of you may remember reading about Claudia in the last May's SEEDLink. The article told how Claudia's interest in teaching and technology was inspired by her father when she was just a little girl in Columbia. Our hope with these SEEDKITS is that they can inspire more children to have an interest in science everywhere.

Claudia, thanks so much for being here today.

CLAUDIA URREA: Thank you, Love. Welcome, everyone. I want to start by telling you a little bit about solar energy. Solar energy is the light and heat from the sun. We can generate electricity from solar energy and this can be done in two ways. The first one, which is more familiar to us, is through photovoltaic batteries which are the cells that help transform the sunlight into electricity and we see this in the rooftops on houses and on our web-site you can see pictures of concentrated solar photovoltaic plants or farms, where a lot of photo cells installed and they are trying to get all of this sun into electricity. The other one is solar radiation and it's used to heat water, for example, which in turn powers a generator.

Now I would like to share with you some interesting facts about solar energy and its usage. It doesn't produce the green house affect or air pollution. However, large surface areas are needed to collect enough solar energy to be useful. On the other hand, solar energy is free and it's becoming more popular and we see more of this in individual houses and buildings. About two billion people in the world currently live without electricity. For those of you in the United States, accounting for only 5% of the world's population, Americans consume 26% of the world's energy. And the last fact I have, which is really relevant to the presentation today, is about 30% of the total energy consumption is used to heat water.

Now I'm going to ask you a question. What other sources of energy do you know? Wind, water. Very good. Biomass.

Solar Water Heater SEEDKIT activity is one part of a larger effort in SEED. We have two big topics on our web-site. One of it is Earth Science within the Global Climate Change and Energy section. The second one is the Energy Project, where you could find relevant information about solar energy, other energy sources and the effect that it has on climate.

Let's get to the SEED Solar Water Heater SEEDKIT web-page. There's a number of information we have here and it's all related to the SEEDKIT, including activity guides, information about equipment, tools and materials to build a passive solar water heater and an active one. Also, it contains a presentation that helps to engage participants, either teachers or students or both, and a workshop outline. Besides, there is a number of videos that walk you through the activities that introduce the solar water heater concepts to the audience.

It is incredibly easy to put together a water heater. The first step is to build a solar water heater panel. You need a flat box, you put aluminum foil at the bottom and coil the 6mm tubing in this panel. You need a thermometer that you seal into the heater with a clear sheet of acrylic and tape. So this is the first step: build the panel with a thermometer. The second step is to measure and record water temperature. Then you run the water through the self-assembled tubing. You get another tubing that is larger (a 10-mm tubing) and then you attach it at one of the ends to make sure that you can attach a funnel. And you use a beaker to put all of the water through. So, this is the second step where you register the initial water temperature before you put it in the solar water heater. You're almost ready to start your experiment. Seal both ends and here you can see, in this first picture, your solar water heater completed. You have to get two clothespins to close both tubings at both ends once it's full of water. The experiment begins when you put the solar water heater in the sun and you have to make sure that it's directly facing the sun. Read the thermometer inside the solar water heater. Record the temperature in your activity table sheet. You may need about an hour for the experiment. At the end of the experiment, you read again the temperature. But this time you have to open the two ends of the tubing, pour the water back into the beaker and stir it before you read the temperature. But get an initial temperature of the water before you put it into the solar water heater and measure it at the end of your experiment. To sum it up, there should be two temperature reports: the water before entering and after leaving the panel. Also, continue measuring the temperature inside the panel at all times during the experiment. When you have all your data together, you're ready to discuss questions. For example, "Did the temperature increase steadily?"; "Did it reach a value and stay at that value after a certain time?"; "How close was the final water temperature to the final panel temperature?"

This is basically an overview of the experiment of the activity that has to do with the solar water heater. The Solar Water heater SEEDKIT provides a second activity which is called an active solar water heater. This is similar to what a typical building is required to have--a solar water heater that doesn't only heats the water but also runs it through the building at a consistent temperature. In your kit, you will find a white motor that you could actually use to pump water through the panel and also on the outside of the heater. It's a different type but similar to what you had to do in the beginning. With the second activity, you would work with a different measurement table and also have other questions to explore with the participants.

Now let's go through the workshop outline. The main idea is that you run a one to two-hour workshop to help students learn about solar energy and how this energy can be used to heat water. For the preparation, you might consider leafing through the SEED Workshop Guidebook, located on the SEED web site. You, together with a SEED country coordinator, may want to select a school and then contact the teachers to have a number of registered participants so you could properly prepare for the event. We recommend that maybe two to three students get one of this kits that I've just reviewed and do the activities described in it. You may want to purchase Solar Water Heater SEEDKITS and find the materials locally once you get the first SEEDKIT. All of this information you may find in the workshop outline and we suggest you follow the outlined process, which is easily adjustable according to the local needs or the situation. The one-to-two workshop could be held on its own or as a part of a larger workshop on energy. Or you can just do one activity. As you see, it's really flexible and allows for adjustments. The workshop procedure suggests that you do a general self-introduction, followed by the theme introduction, the same way I did, that is explaining the concept of solar energy and solar power and the objectives of the workshop. Also, provide some facts and information about solar energy. Divide the students into smaller groups and engage them with the SEEDKIT activities. And those could be either the passive solar water heater which I reviewed in detail or the active solar water heater which I already mentioned briefly. As an additional activity, you could ask the students to research this topic on the Internet. You are welcome to use SEEDLAB tools such as Scratch and MicroWorlds to engage students and to build a simulation of a solar water heater; you can write a song or a skit about a solar water heater. Or think about an activity you can do in collaboration with another school, in which case you could contact your local SEED country to make the arrangements. And you can also create a report, an animation, a video or anything that you want to share with us for publication on the SEED web-site.

There's a number of SEED and Schlumberger Web-sites and resources that we have in this outline that you may check out. For those of you who are familiar with the workshop

setting or with running an energy activity, if you have ideas of how this could be done in the school, we would like to hear from you. So if you want to use the chat to share some of those ideas with us… Anyone? So we have one, "Connect it with an Art Project", that's a good one. In the past we had workshops that prompted students and teachers to work on campaigns that convince people in their communities to save energy. For instance, students created a smart shower campaign that asks people to spend less time in the shower, which then reduces water and energy waste. So those are some of the ideas that could come out from this program.

Back to the outline. We have learned a little bit about solar energy; we looked at the Solar Water Heater SEEDKIT Web-site briefly and at one of the activities within it, which is a passive one. We also briefly discussed the active heater and learned that you need a motor to build it. We also looked at the workshop outline document and discussed some of the follow-up activities. I want to read some of the ideas that just came up in the chat. We have Jose, who says, "Since this is about solar energy, what about powering a motor using a small solar panel instead of a battery?" This is a good idea; it's actually suggested in our information materials. Instead of using batteries, Jose suggests to use photovoltaic panels to power the motor so you use all along solar energy. This is a really nice idea.

And Caroline's saying, "I'm in Norway and I'm sure it would be fun to compare increases in temperature in places like Houston and Angola". So we know that Caroline is interested in doing a collaborative project with a school in a different continent or region. I'd like to go back to Love for the Q&A session.

LOVE ZUBILLER: Great, thanks Claudia. Now it's time for questions. So, as we said before, we would love for everybody to ask questions right now.

LOVE ZUBILLER: It looks like we've got a question coming from Michael. "How can I order this SEEDKIT?" That's a great question. There are two ways you can order it, one is through SWPS, which is the Schlumberger Web Procurement System. If you go there and do a search for SEEDKITS, all our different SEEDKITS will come up. If you scroll back down there one more time, on each SEEDKIT web page we have a link to SWPS and we also have a link to the SEEDSTORE, an external storefront where anybody around the world can purchase a SEEDKIT using their credit card. That's for people outside of the company--that's what this is meant for--and it can be sent to just about any place around the world.

Are there any other questions?

Caroline had asked about comparing the results with other schools around the world and that's something that we're trying to make a lot easier for everybody. What you're going to see in a couple of months is a new collaborative web site that has a lot more dynamic features on it where you, as a volunteer or a teacher, can enter those results and can collaborate on-line with other teachers and volunteers around the world. So, that's something new and very exciting and it's just not ready yet right now but you will see that a little bit later this year. So, just to give you a little peek about that. We have a couple more questions in the chat; "How many different languages does this come in?" It comes in seven languages. Every single SEEDKIT has all the languages on the CD, so you don't need to order an individual language version of the SEEDKIT, you can just order one CD and it's going to have everything. And those languages are Arabic, Chinese, English, French, Portuguese, Russian and Spanish. Carol Beal has asked "How long does it take to do the entire experiment?" Claudia, can you answer that one.

CLAUDIA URREA: There are two ways you could do this. You could do the solar water heater experiment or activities as a self contained activity; it might take one to two hours. The active one that includes a motor might take a little bit more. You could do that as a part of a larger effort, for example, a collaborative workshop, or a school workshop about energy, this might be one activity that is part of a larger workshop. But it takes one to two hours, we are estimating based on our experience.

And then I see another question, which is "How many people can participate in this activity?" You know you could do this with a large group but you can organize two or three students and have enough materials for them to do the experiments. So, it might be a big group but then you want smaller groups doing the hands-on part and collecting the data and maybe comparing among groups the results.

LOVE ZUBILLER: Great! Claudia there's a couple more questions in the chat. Krysti has asked "Can we share the Solar Water SEEDKIT with other teachers and can it be reused?"

CLAUDIA URREA: Certainly, we have all the materials on a CD: pdf documents and PowerPoint presentations that you can save on your computer or print them out. There are some replaceable materials that you need to purchase locally. The beaker, the funnel, and similar items will last you for a long time. You don't need to replace them but since you use panels, you might lose some of the tubing in the experiment.

LOVE ZUBILLER: Thank you, Claudia. A couple other questions. "Where can I download the presentation?" Here is the answer. Go to each individual SEEDKIT page,

and there will be a recap of this webinar so you'll be able to download the audio component and a transcript of the webinar. Each SEEDKIT comes with its own slide show that walks you through it and you can find it on the web page in the list of resources. Every single SEEDKIT has that slide show and maybe, Claudia, you can tell us the difference in the presentation that you gave today?

CLAUDIA URREA: Yes, there are videos that walk you through all the materials included in the kit. There are videos that demonstrate how you put together solar heaters. My presentation includes a little bit of everything. In the workshop outline and presentation that we provide you get a number of things that you can put together the way you want, but we can also share this particular presentation. I would be happy to share it with you. I also use the Internet to get additional data and interesting facts that I found on the web.

I see a question about other SEEDKITS available. We have other SEEDKITS: Buoyancy, Connected Wisdom which has not been introduced yet; Evaporation, Fruit Power, Malaria and You, Road Safety, SmartWired, Viscosity and Water Testing. And we've already conducted half of the above-mentioned SEEDKITS webinars.

LOVE ZUBILLER: You can download the transcripts and these webinar presentation recaps on all of the SEEDKIT web pages that have already happened. If you go to the Fruit Power SEEDKIT web site, you can see the presentation there and download it.

Another question-- "Do I need to get my managers approval to order it?" That's a great question. If you order it through SWPS, you do need to get your managers approval and what we have found is that because SEED is a part of the Schlumberger company culture, managers are willing to pay for a few SEEDKITS to be ordered and shipped out to wherever you are. This is part of the company culture, it is a company activity. In many cases, to do a SEED activity a volunteer might need to take a half a day of vacation in order to do that. Some managers require that, others don't. It's really whatever your manager on the local level can afford. But we have found that managers have been very willing to do lots of things in support of our program.

CLAUDIA URREA: Another question: "Are there presentations in Spanish?" Again, all of the materials come in seven languages, all of the SEEDKITS come in seven languages and we have the pages translated in those languages. Yes, they're in Spanish and other languages as well.

LOVE ZUBILLER: Another question-- “There are a lot of SEEDKITS available, is there a specific order I should teach them in?”

CLAUDIA URREA: There’s no specific order. In SEED focus on a selected topic and we tend to facilitate workshops around those topics. We’ve done “Water Testing” for a number of years, and we’ve done “Energy”, and now we’re doing “Health and Safety.” You are free to choose to do any SEEDKIT or workshop around any SEEDKIT that might be relevant to you. In geographic locations affected by malaria, “Malaria and You” might make more sense than anything. If you are in areas where there are traffic accidents and safety on the road is an issue, you might want to do the Road Safety SEEDKIT activity. So, it really depends on the local situation and what is relevant to you.

LOVE ZUBILLER: One more question. “How can we get these kits for SEED in Brazil?” You can order one yourself through SWPS which does require your managers approval; you can order one through the SEEDSTORE using your own credit card or you can even try your local SEED organization. Clarice Auler Lomba is the SEED Coordinator in Brazil and you can check with her to see if she has any SEEDKITS on hand or if she would be willing to sponsor a SEEDKIT to be sent to you to do at a local school.

You can take a SEEDKIT to any school. It doesn’t matter if it’s a SEED Connected school or if it’s just a school down the street from your house. You can take a SEEDKIT anywhere. You can do it with your own kids; you can do it at work if your colleagues are interested in it.

CLAUDIA URREA: In the past, in some of the post-webinar surveys, participants expressed interest in facilitating SEEDKIT-based activities in their child/children’s schools. If you feel more comfortable getting started with your own kids at their school, that’s a great way to start. Maybe, down the road you would consider presenting SEEDKITS at a nearby SEED school to teachers and students.

Again you can order the SEEDKIT through SWPS internally. The SEEDSTORE is open to anyone with a credit card, so if you want to purchase a SEEDKIT, you can do that with your own credit cars and we will ship it to wherever you are.

LOVE ZUBILLER: We're always available to answer your questions and we'll send a follow up email to all of you that includes a link to a short survey that we'd love your feedback on this webinar and on the idea of the Solar Water SEEDKIT. We'd appreciate if you could spend five minutes completing that survey this week and giving us your thoughts and opinions.

I want to thank everyone again for coming to this webinar and for your interest in the SEEDKIT and the SEED program. We all look forward to hearing from you soon. Thank you, Claudia! Everyone, I hope you have a nice afternoon, a good evening and a good night.