The Health Benefits of Solar Cookers, Portable Microbiology Laboratories and Water Purification Locally and World-Wide

An Interview with Dr. Bob Metcalf

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KIRK HAMILTON: Welcome to Staying Healthy Today, a health-oriented radio show committed to bringing you key experts in the fields of nutrition, prevention and integrative medicine.

Hi, my name is Kirk Hamilton your host of Staying Healthy Today, and our mission is simple: To provide you credible and usable health information from interviews and our educational resources to help you Stay and Be Well in the busy modern world. Please take a few moments before or after listening to this interview to browse through the Prescription2000.com website, the home of Staying Healthy Today Radio, for our free educational services.

Today’s show topic is The Health Benefits Of Solar Cookers, Portable Microbiology Laboratories and Water Purification Locally and World-Wide. Our guest today is Dr. Bob Metcalf, a microbiologist and professor of biological sciences at California State University Sacramento. He obtained his bachelor’s degree in biology at Earlham College in Richmond, Indiana, and his Master’s and PhD in bacteriology at the University of Wisconsin in Madison. Since 1978 he has been involved with solar cooking and solar water pasteurization projects including leading many international workshops. He is a founding member and former board president of Solar Cookers International which has its headquarters in Sacramento, California, and an East African office in Nairobi, Kenya. Waterborne diseases account for up to half of hospital admissions in developing countries. Dr. Metcalf has assembled a portable microbiology laboratory that enables world class microbiology to be performed anywhere involving community members in the testing and interpretation of these results. In 2008, Dr. Metcalf led water testing and solar pasteurization workshops in Kenya for the Ministry of Public Health and Sanitation, the Water Resources Management Authority, and the U.N. Habitat-Lake Victoria Water and Sanitation Project. His goal is to bring modern microbiology to Africa to decrease water-related diseases and deaths.

So it is my great pleasure to introduce Dr. Metcalf. Thank you for coming today.

DR. BOB METCALF: My pleasure to be here.

KIRK HAMILTON: I guess my first question is where did solar ovens come from? I have this picture of two elderly grandmotherly figures from a newsletter. So tell me where did they come from?

DR. BOB METCALF: I first learned about serious solar cooking from these two women in Arizona, Barbara Kerr and Sherry Cole back in 1978. What they had done is they had developed a very simple solar cooker, a box type of solar cooker, and that was the one I purchased in 1978. I bought one from them and they shipped it to me from Arizona to California and it was the first type of box cooker that came to California. I started using it in June of 1978 and immediately realized, “Oh my goodness this makes cooking so much easier, the food is delicious.” Also, I knew around the world that people need to know that there is now a simple type of solar cooker to do cooking around the world.
KIRK HAMILTON: So you first got interested for your own personal use. It wasn’t, “I have this worldwide vision of helping poor countries.” It was kind of the reverse? You saw something practical you could use…

DR. BOB METCALF: I had two boys at the time, 2 and 5 years of age, and I am doing a lot of the cooking and, oh my gosh, this made it a lot easier and we could cook a lot of food then on our solar cooker. We just put the food in dark covered pots; put it in the solar cooker; go off and do other things. The food cooks, it’s delicious, and we never used our Weber cooker after that and the next time there was a Goodwill pickup it was donated to that.

KIRK HAMILTON: So these ladies started the solar cooker movement again for similar reasons as you did, to use locally, not as a vision for ‘worldwide expansion,’ so to speak?

DR. BOB METCALF: That’s correct. In 1976 they had seen these parabolic dish cookers and some other slant-face cookers and they live in Tempe, Arizona, and boy, the sunshine is really great there. Then they just tried a few things and they came up with a box cooker which was easy for them to make. It’s just a box within a box and then it has a reflector on it. Kind of like lifting up a suitcase with a lid on it and that has a reflector that directs more sunshine through a glass window into a dark cooking area. They then found that when they had a number of people come stay with them that they could cook with the sun and cook for 30 people day-in and day-out which they couldn’t have done otherwise. And so they looked at it as a practical thing of using the sunshine, the abundant sunshine in Tempe and Phoenix, and then that’s how it initially spread.

KIRK HAMILTON: Any kinds of foods that you can or cannot cook, or what are the best foods to cook in a solar cooker?

DR. BOB METCALF: Well just about everything comes out wonderfully. When you’re cooking vegetables you don’t have to add any water with them. Now a couple of the vegetables are a little bit tougher like broccoli’s a little bit tough. If you just bake it turns kind of army green and so sometimes if I’m doing that, I would just heat the water and get the water boiling and then dump it into that. But what we do is (cook) carrots, potatoes and zucchini at this time of the year. Corn on the cob is wonderful. I have it all the time and you don’t add any water. You just bake it for an hour and a half. And the carrots, potatoes, zucchini, tomatoes and onions and other things just come out wonderful like that. Squash is delicious. When you start getting the apples you can make them into applesauce. You don’t add any water you just bake them and they come out wonderful, there just baked apples.

KIRK HAMILTON: How about overcooking something in your solar cooker?

DR. BOB METCALF: It’s really hard to do. The strategy is get the food on early, don’t worry about overcooking, and it is possible if you have one of these cookers and you left something in there like corn on the cob for four or five hours you could drive out enough moisture so it wouldn’t be as good. But usually you get the food on early and don’t worry about overcooking. The temperatures actually get around 200 degrees Fahrenheit, but they don’t get up to 350 and burn food. So you get the food on early and don’t worry about overcooking. If you want to put on a roast on top of carrots and potatoes, just let it go all afternoon. Juices go into the food and it’s very delicious like that. But also a lot of vegetarian things. If people are cooking beans, like we do quite a bit, you just soak your pinto beans overnight and then you cook them for four hours of sunshine. It’s free to do that.

KIRK HAMILTON: So when did you start getting an ‘inkling’? Was it right away that you said,
“Man this could help the world!” Or was it a slow growing process?

DR. BOB METCALF: Immediately! Because I am a biologist and I knew about the fuel wood crisis in developing countries I recognized that a couple of billion people needed to know that there was a simple solar cooker out there. I’m a microbiologist and I also knew you don’t need to boil water. You could pasteurize it with temperatures like about 149 Fahrenheit and this could do that. So that was another thing that I started looking into immediately - addressing two of the major problems in developing countries, no wood to cook with and the water is unsafe.

KIRK HAMILTON: Let’s talk about some of the problems with just getting fuel for fires and the health aspects of that. I remember seeing little kids in Guatemala with the strap on their head and the wood carrying over their back. So I don’t think people realize how much energy and time it takes to collect the firewood every day. And then you’re in an area where you’re cooking, maybe it’s an enclosed environment and the smoke and fumes. So tell me some of the health aspects that solar cookers could help with.

DR. BOB METCALF: There are about two and a half billion people today on the planet that are using traditional fuels, things that you burn. It’s gonna be particularly wood or crop residues. These people can’t afford the modern fuels that we have. Some of the estimates are it takes about two pounds of wood per person a day to do some cooking. You go out camping if you’re going to cook with some wood, that’s about right. You have five people that you’re cooking for 10 pounds of wood you’re gonna need. Okay that’s ashes after the end of the day. And then you have to have another ten pounds the next day. Now if you’re just doing camping that’s once in a while. But what if that’s your livelihood? Well, what happens then is around the village that you live in, you’re deforesting the whole village and you’re cutting down all the trees and it gets harder and harder to collect, and it’s not sustainable. That’s what I recognized immediately here. That the tree planting programs that are around the world are not going to come close to getting two pounds of wood per person per day. You’ve got to find an alternative to fire and these two women came up with a nice box cooker and from that we’ve developed an even simpler model, the CooKit model and that could address those problems.

KIRK HAMILTON: So most of the people, when you use a solar cooker, you take the smoke and fumes outside. Do a lot of people in developing countries cook in an open fire or do they cook within a building they might get trapped in with fumes?

DR. BOB METCALF: Quite often it’s both. Sometimes they will cook outside and that’s very inefficient, a three stone fire. Then sometimes because the wind blows out there people cook inside in cooking huts. I’ve been in some of those things and you’re just choking from the smoke and the women say they get used to it, but their lungs and their eyes don’t and they have respiratory diseases and they have ocular diseases.

KIRK HAMILTON: There must be a family member or multiple family members who do this as a full-time job every day. You know the first thing the child goes out and starts looking for firewood if you don’t have an option.

DR. BOB METCALF: In many parts of the world that’s the case and it’s the women’s work to collect the wood she’s gonna use to cook her family’s food. If men collect wood they collect it to sell. And then also the little kids are supposed to bring home some firewood. But just think of the problem. You have to bring home - a family of four or five has to have eight or ten pounds of wood a day and then its ashes. That’s just not sustainable.
KIRK HAMILTON: I think I remember, and it might have been one of the solar cooker events where I saw the actual danger of people going to other tribal areas trying to collect wood. That they would have to go outside of their area and they might cross another path of another tribe and they’re not very happy, that kind of thing, as well.

DR. BOB METCALF: That’s particularly in some of the refugee camps, like in the Darfur camp in Chad right now, and also then in, there was a camp also in Kenya, the Dadaab refugee camp. If the women leave the camp and they have to walk for miles because those camps are in places where there aren’t a lot of trees or else people would be there, and then they’re threatened with being beaten or raped and it’s a very dangerous effort to go out and collect wood and it’s not sustainable.

KIRK HAMILTON: I remember seeing that. And obviously soil erosion as you take away trees that’s a problem, and what does it do for soil erosion?

DR. BOB METCALF: That’s right when you just keep cutting down all the trees that are in places and the rains finally come it washes away the soil, and you also have no habitat for animals to rest under or for animals to be in. So you’re destroying the environment, but you have to do it because what’s the alternative to fire? People don’t know that it could be as simple as this little cardboard container we have here in the studio.

KIRK HAMILTON: Well let’s talk about that. When did Solar Cookers International come about?

DR. BOB METCALF: It came about in 1987 and it came in that a woman in Stockton, Beverly Bloom and one of her friends, felt like there needed to be an organization that could spread this information. I had been doing solar cooking since 1978 and she and others in Stockton had learned about it and she thought that there needed to be an organization. I was very glad to be a founding member and so were Barbara Kerr and Sherry Cole. So Solar Cookers International was started in 1987 and with a very modest budget and with lots of volunteers doing things it’s continued on. We have a lot of educational things we’ve developed which are very useful.

KIRK HAMILTON: How do you get ahold of Solar Cookers International?

DR. BOB METCALF: Solar Cookers International it’s here in Sacramento. If you get on the internet it’s www.solarcookers.org. This will take you to the SCI website and it’s down at 1919 21st Street here in Sacramento, which is 21st and about S Street. But get on the web and find our solarcookers.org website.

KIRK HAMILTON: I always enjoy getting the newsletter. It’s so practical and you get to see the faces around the world. Tell me how many countries have you personally traveled to spread the word of solar cookers and the water purification and such?

DR. BOB METCALF: Initially I was doing things with the box cookers that Solar Cookers International had and I got to about at least about a dozen countries to show people how to build and make the solar box cooker. And then in 1995 Solar Cookers International had this very simple model called the CooKit. This is one that folds up like a book and you unfold it. It looks like a clam shell that’s about three and a half feet wide and it’s got reflective aluminum foil on it. In that one then you cook in a dark pot that’s inside a clear plastic bag. We started that in 1995. That’s so easy you don’t have to show people how to make things from that, and I’ve been to a couple of countries doing that, but it’s recently then that I’ve been doing the water testing and water pasteurization.
KIRK HAMILTON: Where are those (CooKits) manufactured? Do they manufacture them in the country or are they shipped over from the United States?

DR. BOB METCALF: The first batch back in 1995 that Solar Cookers International had in a refugee camp, Kakuma refugee camp in northwest Kenya, they were made here in the United States. But we realized that was inefficient and ever since then in Kenya then we have a couple of manufacturers that make the cardboard pieces and the women at Solar Cookers International has the solar cookers reps put on the aluminum foil on it and a trim on it and so you want to make it in country because it’s just simple cardboard. It’s a 3 x 4 foot piece of cardboard, about 12 feet of aluminum foil and some glue. And my gosh! You can make yourself a cooker.

KIRK HAMILTON: So do most people have their own pot? How much does one of those cost? I know there’s a cost to maybe support the organization, but like just a new cost of materials?

DR. BOB METCALF: In Kenya it costs about 6 dollars or so, 6 to 7 U.S. dollars, which is a lot. I think it’s also because we’re an American company and they’re charging us more than they would, even though we’re a very modest nonprofit. Because the materials really should only be about two dollars or three dollars apiece. The ones that we buy here in California at Solar Cookers International, it’s got lots of printing on the back and instructions and I think that it basically costs us about 11 dollars a piece. We sell it for $25. That’s what then helps run Solar Cookers projects.

KIRK HAMILTON: So how about the plastic bags that go with it. How - are those made in Africa or in Kenya? How does that work?

DR. BOB METCALF: We get those in Kenya. There’s no problem getting those, and I’m not sure where they’re made. They might be made in Thailand or some other place like that, but they’re very easy to get. You can use the oven roasting bags that you find in the supermarket. You put turkeys in them and you use that type of roasting bag.

KIRK HAMILTON: How many uses do you get out of the bag?

DR. BOB METCALF: You get about 15 or so. Eventually ultraviolet light starts to make it brittle and initially you can put some scotch tape on it and patch it up like that.

KIRK HAMILTON: How about the black pot? Does the user have to have a special pot or in the indigenous areas do they use their own entities?

DR. BOB METCALF: Well usually when they get a cooker it’s best if they get their own pot, you have to have a lid with it and in Kenya then, they sells those pots with a flat lid and they’re usually just aluminum and we paint them with – what they use over there is cardboard black paint which doesn’t – it’s not an oil-based paint. And here we use just exterior latex paint when we’re painting the pots. Or we get these granite-ware pots that I have, the one with the black enamel on it. Those are wonderful.

KIRK HAMILTON: So when you said you’ve traveled those countries, are they mostly African countries, or have you gone to, like South America or Central America or Asian countries, or is it particularly just African countries?

DR. BOB METCALF: It’s mainly been African countries that I had the box cooker projects. My first one actually, though, was in Bolivia. That’s where we had a box cooker project. I didn’t have the
microbiology then and we didn’t have that simple CooKit at that time. But it’s mainly been in Africa.

KIRK HAMILTON: So I have a question. Let’s say you’re in the Andes and you’re, I don’t know, 8000 feet up or 9000 –

DR. BOB METCALF: Or 12,000.

KIRK HAMILTON: 12,000?! So it might be chilly outside, but the cooker can still work if there’s sunlight…I guess that was always a question of mine.

DR. BOB METCALF: Yes, if you’ve got sunshine you can still do some serious cooking even with our CooKit here. You have to have sunshine. You’ve have to be able to see a shadow, and you need about three hours of sunshine to do serious cooking.

KIRK HAMILTON: So you could have theoretically snow on the ground on a bright Tahoe day and you could cook something?

DR. BOB METCALF: People up there have done it! You bet! You don’t have a very big window in the wintertime. But now we’ve got about an eight hour cooking time.

KIRK HAMILTON: So let’s progress to the Kenyan project that you were just on. You were there in July of 2009. And I sense that your work has, I don’t know if transitioned is quite the right word, but you’re doing more in water purification and the portable microbiology laboratory. That’s more of your direction right now. Is that correct?

DR. BOB METCALF: That’s right. And from the very beginning I was interested in the microbiology aspects because if you heat water with sunshine – if you heat water anyway to 149 Fahrenheit, that’s 65 Celsius, you will pasteurize the water. Now most people that are listening to this think, we’ll you’ve have to boil water maybe for 10 minutes to make it safe to drink. That’s nonsense. Let’s go to food microbiology. If you heat water to 65 Celsius you will pasteurize water similar to milk pasteurization. So I knew about that and had a number of students at CSUS that helped establish the scientific basis of that and we published on it. Then when I got to these developing countries - how do I test the water? Initially in Bolivia I’d have to bring a sample back to my lab here at CSUS. Then I was interested in isn’t there some way I can do microbiology out in the field? There were a couple of tests that were developed, one was in 1988 called the Coli Alert Test, and it tests for the indicator bacterium E. coli and I use a 10-ml test for that. Then the food industry came out with a test for E. coli. It’s a Petri film - a Petri dish is something we used a lot of, but now there’s Petri film which is just some nutrients on a piece of cardboard, and now I could sample 1 milliliter of water and if I find E. coli after you incubate it, that’s a high risk of disease. So now I put these two together into a portable microbiology laboratory. What’s important about that is that water-borne diseases, lack of safe water and sanitation, account for about 40% of the hospital admissions in Kenya and other developing countries, but nobody can test the water because they’re doing obsolete microbiology. So I put together these two tests and I’ve been working then in Kenya particularly, previously in Tanzania, to bring these tests to people and even then take them to villages so that you can involve the whole village on how we’re going to test water and what we’re going to test for. They look at the results. If the water’s unsafe, we can pasteurize it by heating it in a solar cooker or we could add chlorine to it to pasteurize it.

KIRK HAMILTON: So if you just test for E. coli – how many things are you testing for?

DR. BOB METCALF: What you’re looking for is E. coli and that bacterium is an indicator of
recent fecal pollution. And the reason it’s been the indicator we look for is that we all have it in our feces and so do other mammals in high numbers, 100,000,000 per gram or so. It doesn’t grow in the environment. That’s really important. It survives at least as long as bacterial pathogens that cause cholera and typhoid fever and dysentery, and we can test for it. So for over 100 years we’ve looked for water – do we have this indicator of fecal pollution? And if you find it it’s usually going to be more abundant than any pathogen and so it’s our index organism. Even though itself is not a pathogen. They live very happily in us, most of them, the E. coli, and don’t cause diseases.

KIRK HAMILTON: So if you pasteurize the water and get rid of the E. coli, therefore you’re going to get rid of other pathogens. Is that the logic?

DR. BOB METCALF: That’s right. Because the heat resistance of E. coli is also very modest then. If you get to 65 degrees Celsius with E. coli or the other pathogens, bacteria or viruses or protozoan cysts, within a few seconds you get a 90% kill. So if you’re up in one minute at 65 Celsius you’re going to take everything that’s there down to zero, and that’s what we want.

KIRK HAMILTON: Okay. So how easy is it for these villages – you want to take this out and be practical? And how easy is it for someone to learn this? Do they learn it in a weekend? Do they learn it in a three-hour course? How do they do this?

DR. BOB METCALF: It’s usually a couple hour session and we have the whole community there. What I’m particularly interested in explaining is about bacteria and how those invisible tiny organisms can be a problem and that’s because they can grow and they can double their population each division. Twenty divisions, one cell’s a million. Do the math on it. Thirty divisions, it’s a billion. And then you’ve got a lot of cells and you can see some things. And that’s what we’re looking for then. We’re gonna inoculate a tube with 10 ml of water, we’re going to inoculate a petri film with 1 ml of water, and let these things grow overnight. Then there are millions so we can start to see evidence of a colony on a petri film, a blue colony that’s E. coli. Then the people understand how these invisible organisms they can’t see could have explosive growth in their intestines and that’s how typhoid could cause disease, that’s how cholera could cause disease. You de-mystify microbiology.

KIRK HAMILTON: Then tell me, once they identify this. I was looking on the slides that you have on the website, how did they purify the water? It seems like you purify the water by either a solar heating or other pasteurization methods and how long will it last in those containers that they have? The water to be pure? In other words how often do you have to test that water? Or does it stay pure once you’ve done it?

DR. BOB METCALF: Once you’ve killed the organisms they’re dead. They’re not going to come back. So you just don’t want to recontaminate things. So we emphasize that and the project that Solar Cookers International now has in western Kenya where we are going into villages which have unsafe water sources and we are introducing the water tests so people can see if the water’s unsafe or not, and then how we pasteurize the water. We also have a ceramic storage container so people can’t stick their hands into it and contaminate it. It has a very nice valve to release water from it. Once we’ve made the water safe to drink, put it into a safe storage container and then it’s going to come out safe. That’s very important to do that.

KIRK HAMILTON: How much water can they pasteurize at a time?

DR. BOB METCALF: They can pasteurize about 5 liters of water in around two - two and a half hours. The people I was visiting then that have these systems, what they can do is in one day, in the
morning time to early afternoon, they can pasteurize 10 liters of water that could last a couple of days. Then they could use the CooKit for cooking food in the afternoon. So you don’t have to tie it up all the time just for pasteurizing water.

KIRK HAMILTON: So if 5 or 10 liters will last a couple of days for someone in Kenya, how long would that last us in the United States? How much water do we go through?

DR. BOB METCALF: We go through a lot, but you know, that water that you flush your toilet with, you could have drunk that water. The water you wash your car with or water your lawn with that’s drinkable water. But the water we actually drink if we were just to separate that out is a couple of liters a day and would be sufficient for that. You don’t need safe water when you’re cooking your food because the cooking process is going to kill all the germs. That’s what I was finding out in July just this last month. That they would need maybe about 5 liters for the family a day. Five to six liters of water a day that they’re actually going to drink. The other water that they’re washing clothes with or other things, you don’t need to have that pasteurized.

KIRK HAMILTON: Are you able to duplicate this process? In other words if you go over and teach, and you teach, I don’t know, how many people did you teach this time?

DR. BOB METCALF: Well we had a workshop for about 50 people that are water service providers that came from 23 areas that provide water, and that weren’t able to do any water testing. So this last time that’s just what I did on that testing. Previously I had also had water testing workshops for different villages and communities and for the Ministry of Water and Health.

KIRK HAMILTON: And will they be able to go out and teach other people?

DR. BOB METCALF: You bet. That’s the marvelous thing about it. That one of the managers of a water service area in Kenya said it used to take three years at a polytechnic to learn microbiology and now I can learn it in three hours.

KIRK HAMILTON: Wow! Are there any other parts of the solar cooking and pasteurization process that you want to mention?

DR. BOB METCALF: Well I think that one of the things that anybody that’s listening to this should do is they ought to go on the Solar Cookers website, get a CooKit from Solar Cookers International and a pot and start cooking with it. You can actually do something here. That’s one thing that you can have in common with some of the poorest people on the planet that have to learn there’s an alternative to fire or they don’t have a future. And I think it would really be transforming as well the food is just delicious that you have coming out of solar cookers.

KIRK HAMILTON: So what are your next projects? Where do you see yourself with this whole process in the next four or five years?

DR. BOB METCALF: Well I’m hoping that it’s going to make the scientific community aware that you can test water right now with this portable microbiology laboratory. You can start to address the problems of health immediately. Then we have solar cookers that could help pasteurize the water. I’m particularly focusing on international water meetings and the people I’ve met at the World Health Organization in Geneva last September and working with the Water Ministry, working with United Nations Habitat, to make sure that all these organizations, everybody does water projects, but the missing link is we can’t test. Well I’ve figured that out. It’s a portable microbiology lab. The two companies that
make these products, Idex Company in Maine, 3M Company in St. Paul, they’re helping me out to try to
get these around the world and astonished their products could also be used in every educational system
around the world.

KIRK HAMILTON: I just can’t imagine how needed or wanted you must – or in demand you
must be because you know every country I’ve traveled to in the world, I mean the biggest thing is water
out in the rural areas and I mean this is probably – this simple approach of evaluating the water and being
able to purify it is just the biggest medical, in a sense, breakthrough, because it’s way beyond any drugs
or whatever. Because this is actual true prevention. This is the real prevention. When I was in Kenya,
because I work in a preventive medicine practice, I’m always looking at the way people live and eat, and
when we went to do the medical camps, most of the problems in the medical camp were due to poor water
or poor sanitation. And I just said to myself as I leaving the country, I go if they could clean up the water,
and had some decent sanitation, then eat their traditional diets and not get into processed foods, that
would really help these countries. So yours is to me the ultimate in preventive medicine.

DR. BOB METCALF: And what’s really exciting about this is that you can empower the people
themselves in the communities. You get out to a community and a lot of people hadn’t had much
education. But they’re just like us. You know had they had the opportunities they could have gone on
and gotten lots of education. And you find people and I present these things they way that I present them,
and I’m a teacher, that people can understand about bacteria, why we’re testing for E. coli, how to do the
tests, what the tests mean, and then they can do something about it. You empower these people in the
villages with that information and you could really transform things. You know what I want to do is
essentially a secret. There aren’t too many people that know about that. Here I am teaching at CSUS a lot
and it’s hard to get out there, but I want to make this common knowledge worldwide because this could
make a huge impact on things. You could enable people within communities to take control of things that
they never had control of, and for them to understand germs and transmission of diseases. This is a
marvelous thing. It’s wonderful to go there and to teach microbiology in Bondo village or in various
places I’ve been at.

KIRK HAMILTON: From Sacramento, I feel very proud, because this will go all over. But I feel very
proud to have someone like you doing such great work around the world and I hope you have many more
years of doing this Dr. Metcalf.

DR. BOB METCALF: Well I hope that maybe some people listening to the program will know
about countries where help is needed like that, find out about it. Anybody who wants to get information
about how to get a portable microbiology lab get hold of me because it’s a secret. That’s why I am so
pleased to be on this program. Let’s get it out there and make it so it’s common knowledge.

KIRK HAMILTON: So can they get ahold of you through Solar Cookers International? Is that the best
way?

DR. BOB METCALF: It’s best – I have website. Well just my email address is
bobmetcalfCSUS@yahoo.com.

KIRK HAMILTON: Okay. We’ll have that definitely on the transcripts when they are printed up
as well. So they’re available in PDF formats next to the audio interview.

Well, it’s been a pleasure. I’ve seen you for years and I never have gotten to meet you. This is the first
time I’ve got to meet you in person. So I’m very pleased. It fits in my model of true preventive medicine
because that’s what my life is about. You’ve done it one step ahead, actually before you put the food in
your mouth, you have to make sure that you have clean food and water is the most important part. So thank you very much for coming today, Dr. Metcalf.

**DR. BOB METCALF:** My pleasure to be here and discuss this.

**KIRK HAMILTON:** So in closing I want to thank Dr. Metcalf for his great work and dedication for more than three decades. And I want to thank you the audience for listening today on this edition of Staying Healthy Today Radio. And remember until next time, Stay and Be Well.