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The Ebb and Flow of Clean Tech and Entrepreneurs (Entire Talk)

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Twenty percent of the world's population do not have access to clean drinking water, says Miox CEO Carlos Perea. What's an entrepreneur to do? Ideally, find a way to clean and reuse the global water supply that's, "twice as good at half the cost" of conventional chlorine decontamination. In this lecture, Perea demonstrates his company's abilities and explains the benefits and challenges of being an entrepreneur in clean technology.

Transcript

Carlos Perea is a graduate of Stanford as well as New Mexico, University of New Mexico, but it has been almost 20 years that he was walking across campus as a student in our own business school. He's now President and Chief Executive Officer of MIOX, which I hope we hear a good bit about today. He's been in that job for five years. His career between business school and becoming CEO of MIOX included a long stint at Intel Corporation. So, it is appropriate that this is the eve of Earth Day. So, how many of you were alive when the first Earth Day took place in 1970? All right, good. I figured that was going to be the minority in the room. But it was a tremendous impact from the first day it took place 40 years ago tomorrow. But how appropriate in this seminar series, which celebrates entrepreneurship in all kinds of sectors; information technologies, medical technologies, social entrepreneurship, how appropriate we have Carlos with this today to talk about a clean tech or green tech company. So, without further ado, let's welcome Carlos back to campus.

Thanks a lot, Tom, I appreciate it. OK, so we have a little bit of time together. First, thing I want to say is I want this really to be a discussion, so highly interactive and we're going to kick things off here in a second. But the slide you see up here is just to remind me that I'm here to talk to you about three things. I'm going to share a little bit about the story of my company MIOX and what we do and why we do it, the stage of development that we're at, and our aspirations, if you will. I'm going to talk to you about water, not just because it's Earth Week, but because that is the focus area for MIOX. But really these two topics are only to give context on the third topic, which is what I really want to talk you about, which is entrepreneurship and clean tech entrepreneurship specifically. And the message if I was I guess to summarize my message or give a title to this discussion, it would be 'Clean Tech Needs Entrepreneurs and Entrepreneurs Need Clean Tech.' And I want to talk about why that is and some of the impact that needs to happen if we're to continue the kind of quality of life that we've all enjoyed over the last couple of decades. So, with that one of the nice visual of this besides the fact that we have the planet here and kind of like this idea of MIOX taking on the world, is that small red thing you see underneath is a product of ours, MIOX Purifier Pen. This is actually the same technology that is used in some of the world's leading water treatment facilities.

And it will take virtually any water and render it safe to drink by EPA guidelines. It was actually developed for the US military and quite a few soldiers actually use this out in the field. I think there's about 70,000 of these are so deployed. But you can also get this in a sporting goods store as a consumer. And people who like it are outdoor enthusiast, hikers, backpackers, world travelers, Peace Corps volunteers, those kinds of folks. It's a relatively expensive product; about 140 bucks because it is military spec. I have one of these as a giveaway to start out the conversation and lo and behold, and bending over I have displaced one of my wonderful mikes. But they told me I can go on with one mike. And these are two mikes. These aren't two jumpstarts in case I fall asleep over here.

I think we're OK. So I'll be more careful as I bend over. The product comes in two forms. I'm actually going to reach down. There actually is a water bottle, biodegradable, that goes with this. And the product that I'm going to give away is going to go to the person who can answer a quiz question. But to begin with, I just want a show of hands. How many people in here have started the company or have aspirations to start a company? How many of you are entrepreneurs or want to be entrepreneurs? Great! I'm talking to the right audience. The reason that Tom permits me to do this is because he sees there's a lot of smart people who's going to help me figure out some of the issues I'm dealing with. The first thing I want to do is just by show hands.

Can anybody in here tell me by percentage or by number how many people on the planet today don't have regular access to clean safe drinking water? The kind of stuff we put in our cup every day. Anybody by show hands. Guesses are fine. I'm going to start right there in the burnt color... A billion? A billion. Anybody else? That's pretty close. How about you in white? Four billion? Four billion, wow! I'm glad that is not the answer. I'm going to go with the first one and a couple folks out here. But a billion is pretty close. It's actually about 1.2 billion or about 20% of the world's population does not have access to clean safe drinking water.

With that you get a door prize. You get the opportunity to trade that product in later; I'm going to give you a chance to swap it out. There's a decision you'll have to make before you get to keep that and walk away with it, but for now it's yours and the water bottle for sure is yours. To begin with, as Tom mentioned, it's great for me to be back on Stanford campus. And really when he asked me to do this, I came up with two feelings that still persist. One is I'm very excited about being here. The reason I'm excited is, I know there's a lot of entrepreneurial spirit and embers; I saw the show hands. If this discussion does anything to ignite any of those embers, and give you a better sense of how to go forward with an entrepreneurial endeavor, clean tech or otherwise. I personally consider that a phenomenal success. As Tom mentioned, I'm very ambitious.

So I hope to see some really cool things happen from folks in this crowd. The second felling, though, was one really of humility; or I feel humble for being here. The reason for that is I looked at the list and I watched some of the podcasts from some of the folks who've been here before. It's an impressive who's who. For those of you who are just getting exposure to this program, we're talking about household names of Google and Intel and others. A lot of really need success stories that people are able to look back and talk about what made their endeavor successful and all the lessons they learned. So great successful IPOs. MIOX is not there yet. We certainly have aspirations to do that and to make huge impact both in the people we touch and the financial success we generate. But we're still at this stage a very resource constrained early stage company.

To be sure we've had a lot of success; we have some really new customers and success stories I can talk to you about. And we have a world-class team. We have world-class investors. We've raised over $40 million to get this enterprise moving in the right direction. We have a lot or really positive momentum. But the perspective that you're getting from me today is really one of somebody who is still kind of in the battle, so speak. So I can look back on some of the things, but I'm still looking forward and dealing with some of these issues. So, take it for what it's worth. That is part of the set up. So, let's jump into what is MIOX and what we do.

I've already told you we deal with water issues. Put real simply, MIOX purifies water. We make it safe to drink or swim in or use industrial or do a host of other things. And what I mean purified water, we take out or eliminate any of the viruses of bacteria or pathogens that would cause one to be concerned or potentially have a health issue from coming into contact with that water. That's not what's unique about MIOX. There's a lot of ways to purify water. Quite frankly you can boil water and it does some of the things that MIOX does. It's how we do it that makes us unique. The simple way to think about this is, we use our technology and ordinary salt to create a disinfectant solution that then can be out into water and it eliminates any of those pathogens that we would be concerned about. Our target market, quite frankly, is water treatment chemicals; chlorine specifically, but others as well.

There's about $20 billion annually spent on water treatment, spent on equipment and chemicals each year, and about five billion of that are the chemicals that we're talking about replacing - traditional chlorine in water treatment. I have a few slides and they're all really visual and they're just to prompt me as much as just to give you a quick visual of what I'm talking about. But this is an example of a customer installation. On the top, you can see - this happens to be a beverage manufacturer, one of the markets we sell into - people who are producing either bottled water or sodas or other beverages. One of the first things they do is they actually purify the water. So they get it from a municipality or some other source and they want to make sure it's free of anything that will cause somebody to get sick. In this particular case, we're using a delivered chemical. I'm not going to get into any technical terms, it's not relevant. But I can tell you that besides being aesthetically not very pleasing, it really created a huge safety hazard for the employees associated with this facility. When they took out that system and put ours in on the bottom, they became a very elegant clean solution.

And I know it doesn't look particularly high tech, especially if you're in the back. But trust me: there's about 20 patents or so that have gone into this technology and a whole history with the Department of Energy, the US military, and others developing this technology. So, long history and a lot of intellectual property have gone into this. And this is kind of illustrative of why people buy from us. There's really three reasons or three value propositions, if you will, that we provide customers. The first is

safety, and I'm going to come back to that in a second and talk about why traditional chemicals post such a safety hazard and therefore an opportunity for MIOX to displace them. The second one is quality. I'm not going to get into this in detail but suffice it to say that when you treat water with traditional chemicals, you can get the desired effect in one sense but create a lot of undesired byproducts. Some of that is in the form of carcinogens. Some is smell and taste odor and taste and odor issues that you might associate with say a swimming pool, that chlorinous odor.

Our systems basically work in a way that eliminates a lot of those undesired attributes. But the third reason and the key piece and the key theme of all of this, is we offer a value proposition of economics. That is, we save people money from how they were doing things before to what it looks like once they use our equipment. In the particular case of this example, I think they paid for the system in less than a year and over the span of a five to seven year lifespan, 80% reduction in overall cost. So let me take a step back and talk to you about chlorine for a second, which again is my target market. I want to replace everywhere you use chlorine; in you swimming pools, in drinking water systems, in beverage manufacturing, et cetera. But chlorine is a large market and it's been around in water treatment for good reason. The graph that you see up here is really just to show you that we didn't always treat our water. And this is in the US, but unfortunately you could actually apply the same type of curve today to places that are not treating water at the same level that we do here in the developed world. It shows in early 1900s that there was a very high rate of not only illness but mortality, quite frankly.

It means you got sick potentially and/or could die from drinking water. And that happens today. When we talk about 1.2 billion not having access to safe drinking water, that results in a couple of very alarming statistics. One is about 2-1/2 million people each year; the estimates range between two and five I think, million people dies. So that's about one in four in the Bay Area, more or less. Each and every year from simply drinking bad water that causes them to get sick and ultimately die as a result of that illness. I think even more alarming is estimates are that one half of all hospital beds in the world, at any given time, are occupied by somebody who drank bad water or didn't have access to sanitary conditions as a primary reason why they ended up in that hospital bed. It's a huge health issue and indeed when we started chlorinating our water - and I don't know if you know this as a general rule, that it's not just in our swimming pools, it's in our drinking water - that we actually put small trace amounts of chlorine to eliminate these viruses and bacteria. So if it's so good, why do we think at MIOX that we can replace this and offer a value proposition? Well one of these I've already talked to you about which is quite simply that chlorine is inherently really hazardous. In small trace amounts, it's very effective at what we want, but stored and transported in any appreciable quantities, it's a huge safety risk.

And I'm not going to read this slide, I will just say that the New York Times' article, on the one side, highlighted this issue a couple of years ago when it said the most dangerous place in America was next to a chlorine facility. And the reason for that is it poses a serious risk of accident or intentional terrorism and in small trace amounts, it actually does very nasty things to folks. It's the main ingredient in mustard gas if you think about what happened in World War I and it does some pretty nasty things to your lungs. So it poses a huge safety risk and indeed to not only the communities but to the people who are actually operating these facilities, they would like to get rid of it and not have to get in safety gear and take all the precautions. So that presents us an opportunity. Sorry, I'm going to stand this for just a second longer. The second one of those is quality. A lot of folks don't like the chlorinous odors. They don't like the byproducts. They want less chemistry or chemical in their water.

MIOX really has a really unique value proposition there as well. Meaning, if you were to swim in a pool - and we have lots of pools that are using our system - you don't smell the chlorine. You don't get skin and eye irritation. Your eyes don't burn, those kind s of things. But at the end of the day, it comes down to cost and that's one of the things I want to really weave throughout this discussion is if you can't give people an economic value proposition, you're really not going to get a particularly large segment of the market. And so all of our energy has been on driving our cost down to give more economic savings to the customer. So, I've talked a little bit about some of the customers. In the market that we're going after, it's anybody who's using chlorine. We're on naval ships, we're again, in the military - soldiers use these to get water out of streams or even, quite frankly, a dirty mud puddle to turn it into safe drinkable water. We've been in municipalities for a number of years.

So, there's about a thousand communities throughout the US that use our systems. More recently, we've started to get into high-end hotels and hospitals and other resort properties, in particular around water reuse, which is another topic that I'm not getting into today. We've been introducing products into the beverage market, which we showed you earlier. The last area which isn't necessarily a market for us but is one of the reasons we exist, is to deal with not only disaster relief situations but also the developing world. This is one of my favorite examples of a customer. It's actually a small school in Honduras. We didn't sell this to the school. There was a partner, an NGO partner or non-profit organization, who came in and said they want to do something around water treatment, got educated on systems, purchased ours and then went and took it to Honduras. They've replicated this model. One of the things that is exciting about this is that our systems have dramatically improved the health and the quality of life for the folks in this village.

But this organization is even smarter than that, smarter than we are. They didn't give the system to the small community. They went in and they trained them in how to do a water co-op. And so the end users have better cheaper water, but they also

created a water co-op that has jobs and sustainability. So they actually charge nominal amount for that water and as a result can not only maintain the system but actually you have micro-entrepreneurship going on. That is a phenomenally powerful tool. Believe me, when you can get folks that can improve their quality of life and you product is helping do that in two ways, it's really, really fulfilling. So I'm a little behind on schedule. I'm going to move quickly and talk about why water. I'm going to run though some of this, so if I don't hit on something or doesn't quite make sense, you'll come back and you'll quiz me on it later in the questions.

I'm not going to read this at all. I just want to show you the blue and the yellow and orange colors. This is a world map. Really, when you think about water, which is a very complicated subject that we all take for granted, there's two dimensions of water that I just want to communicate to you. One is the availability or conversely the scarcity, and that's what this is meant to represent, and the other is quality, which I'll talk about in a second. In terms of availability, you have to think about this not only in terms of how much water you have, but how much water you need or are using. And so, counter intuitively there's a lot of areas that are very arid, meaning that it doesn't have much water but there's not a high stress load. They're just not a lot of water usage. And conversely, there's places like the US that have a lot of water on relative terms but we use so much for agriculture, for power, drinking is actually a very small percentage of this. But for all these other reasons, and manufacturing and it put a lot of stress on our systems.

It means that we're depleting our aquifers, we're depleting our lakes, and if we don't figure out how to either reduce consumption or regen or water reuse, we're going to run to some pretty serious issues, and indeed we already are. You see this in places like Southern California, Phoenix, Nevada. All these areas that have actually have a lot of development, have very little water. And it's really hard to see on this because it's so small, but Florida. Who would have thought Florida has water issue? Tremendous water issue because most of the water there is unusable in it's current form. Just a small aside, I'm a true believer that there's really not a water scarcity issue, net-net. It's really one of how much energy you have to put into the water to get it where you want it and the condition that you want it. So, a lot more energy going into water to get it in the places that we want it, in the condition that we want it. So, I'm sorry, you're name who guessed 1 billion, which is pretty close. I guess you're 20% margin of error.

I'm Drew. Drew, so I'm going to give you a choice. Wow! OK. This is a little bit different on what I thought because the other one spilled. But you've got a choice. You can either drink this water or you can drink this water. If you choose to drink this water, I get the pen back, and if you choose to drink this water, you can keep the pen. No, I'm just kidding here. I won't walk you through that. I do want this quick demo of the pens, so you know how to use it.

It's a personal device that uses lithium camera batteries, salt on the top, which is like our large systems. And the technology inherent in here is one of electrolysis. So, we're taking the salt molecules, sodium chloride. We're stripping away electrons in simplistic terms and we're creating other chemicals. At the end of the process, we have a very safe but powerful disinfectant that does everything that chlorine does but it does it much better. It's kind of chlorine with peroxides as kind of the way to think of this. Normally what I would is I would immerse this in water, get a little bit here. I've already done that process and I would press a button and we'll see if this works. You can see, perhaps, some of you in the front row, a fizzing effect. This is kind of an Alka-Seltzer-like effect.

That's actually just the hydrogen that's being liberated in the process and now I have a safe and powerful disinfectant. If I have a stirrer, unfortunately but I think over a couple of minutes, that should actually help change that from a really nasty looking color to something that Drew, even you might want to drink. Later on we'll see. That's kind of how the technology works. On large scale we actually don't do this in little batches. We do this in high volumes. So, water quality is a big issue as well. I'm going to move off of this pretty quickly but this is a picture of actual tap water taken from a municipal system here in California. I know the Notre Dame folks are already kind of laughing, how you can drink this stuff. Actually, don't be too alarmed.

It's actually Southern California I think that this community resides in. But it's horrendous. It's horrifying. You would not want to drink this. And it's not just what you see in the water. It's what you actually don't see in the water that's going to cause you to get sick and potentially violently sick. This is an issue that people get increasingly. There is a lot of confusion about it to be sure, but when they did a recent Gallop poll and they asked people, what are the concerns they have around the environment. Drinking water pollution was number one, more than twice as often mentioned than global warming. So, water is a big issue.

And the last slide I have on this before I talk about clean tech entrepreneurship, which is the real focus of this, is water really sits in this intersection of these tradeoffs. The example I'll give is if you go back a couple of years, you can remember when we were talking about growing our way out of oil dependence. We were going to have enough corn to create enough ethanol that we didn't have to import oil at the rate that we were doing it. It turned out to be a not very well thought through idea because when you considered the amount of water and the power you have to put into that system to get something out, you have two problems. One you're impacting agriculture and food, and two there's actually a questionable return on that investment; extraction if you will. The bottom quote actually comes from some experts that have or at least one expert who has

looked at the China situation that's ongoing economic development and was quoted as saying, "In China you can have more semiconductor factories or more food, but not both. Water is the limiting factor." Again, very complicated topic. Hopefully I've touched on the major reasons why MIOX's focused at water. It gets me to the third topic which is the most important one, which is clean tech entrepreneurship and why entrepreneurs need clean tech and clean tech needs entrepreneurs. I heard Tom, or Professor Byers, taking earlier about how MIOX wants to achieve scale.

I think that's a great way of putting it, but in my terms, the reason most people choose to be entrepreneurs is because they want to have an impact. They want to make some kind of impression. Just as a quick digression: Impact really has a couple key dimensions. And what I mean is, you can have a very profound impact on a small number of people and have a significant impact. Or you can have a very small impact but on very broad reach and also create quite an impact. But in reality and one of the reasons I think clean tech is so compelling, is what a lot of entrepreneurs look to do is have world changing ideas on a very large basis or platform. And clean tech just flat out offers more of these opportunities than just about any technology area that I can think of. Or put in completely different terms: Does the world need faster downloads? Probably not, but we certainly appreciate them. Do we need better social networking sites? I don't need them. Do we often value them very highly? Of course.

But we do need power. We do need water. We need these things to continue the quality of life. So there really aren't small plays, or maybe niche plays, but there really aren't that many small plays in the whole clean tech environment. And I chose water because I couldn't find something that I thought was in more need of having a real significant impact. I think I want to go down to this last slide, there actually isn't one. It's just a wrap up slide. I apologize. So with that, let me tell you that I think clean tech entrepreneurship is both a lot easier on the front end and a lot harder on the back end than other forms of entrepreneurship. Let me explain that.

And it think the difference is, and what I'm about to tell you is relevant, particularly if you're thinking about founding a clean tech company or following somebody into a clean tech company. You should do it with eyes wide open. It's easier for that first reason. It's because entrepreneurs want to have an impact and because you as entrepreneur or as a founder or as a leader within the entrepreneurial company, that's not enough. You need to attract a team that's equally capable and motivated to want to have that impact and share in that vision. And we have a clean tech idea, it's usually easier to have that kind of compelling reach. I'll give a personal example of this. Several years ago when I started at MIOX, I knew I needed a really high quality product development person. And I knew exactly who I wanted. It's was somebody who I had worked with at Intel, really well-qualified young man, three technical degrees from MIT.

I do not hold that against him. It wasn't Stanford or Notre Dame. But just a really talented individual I had worked with. I knew he had the skills and the attitude that would be critical to us at MIOX. One small problem was, he was already out of Intel working for small but very high profile well funded solar company. I approach this person on a personal relationship and I said, "Hey, come take a look." He spent an afternoon and at the end he said, "I love the technology. I really like the team. I'd really like to work with you again. I cannot leave the solar company. We're doing world-changing things and I have a positive social impact.

And thank very much, it's not going to work out." Starting to from the bottom up. So I gave him one of these pens. And three months later, he came back and he said, "Hey, is that opportunity still available?" I jumped at the chance, I hired him, and he's been tremendously key to our success since. But later on I learned what it happened. He got hooked and the way he got hooked was, he went to South America with his family and lived in a situation where he do not have access to drinking water on daily basis. His was the only family that do not get sick over a couple of weeks. And he started not only treating his family's water but that of the community that he was in. And he saw firsthand the kind of impact that could have. So he came back and later on I actually learned that that solar company had offered him more money. But we gave him something that they couldn't, which was an even bigger emotional or moral paycheck, if you will, in the equation.

And so to the degree that you want to have an Earth or world-changing idea, it's great that you can enlist to other folks and you just need to be aware of that power, because it is a really powerful mechanism. People want to make a positive impact, at least entrepreneurs. So I can go on about all the neat positive aspects. But let me give you a couple of the downsides as well because there are some downsides. The simplest way to put this is, it all comes down to cost. I wish the world worked in a way that we all bought the products that made the most sense for all of us. But the end of the day, there's a financial impact. A lot of people forget that in clean tech. They come up with these world changing ideas and folks say, "Hey, I want to go follow that, I'm compelled." And nobody ever stops to think about the fact that it's twice as expensive and has all kinds of other complications and people are just not going to buy it, at least not in mass quantity. You can always find some people, by the way.

I kind of sum it up this way. Some people are willing to pay more to get less if it's the right thing to do. But most people wanted the inverse, right? We all want the inverse. Give me more and let me pay less. And that's really why we've had to focus on having a really key economic value proposition. I was at a press event last night with the solar company and a solid state lighting company and about ten people from the press. And I can tell you right now that there's just a lot of hype and a lot of

confusion around clean tech. People really, they hear the term, or "green tech" or "environmentally sound and safe" and they get all excited. And then they find it what it costs twice as much or three times as much and that dissipates very quickly. And I'm glad to say that two other companies I was with like MIOX are really focused on how you do things better but how do you also make it cheaper.

And that's the only way you're going to get folks to convert or you're going to subsidize it or you're going to regulate it. And that leads to whole different set of issues in clean tech, which I won't get into. But let me just say that the often clumsy hand of the government is just something that you have to contend with in clean tech more than in most other entrepreneurial endeavors and be prepared for that. And by the way, I think that's been a shock to some of the venture community that's invested. That all of a sudden, not only do they have to pay attention to regulation, you may actually have to go influence it. That has a whole set of implications. So there's couple of real downsides to clean tech. The fact of the matter is the one that I haven't hit upon yet, that I'll share with you now is you have a lot of momentum in this industry. And it's really hard to go change people's perspective. I think solar has done a great job again because of a lot of regulatory and publicity reasons, but even that faces a very steep uphill battle.

In our particular industry, we have folks that have been doing it the same way for years and years and years. And getting people to change when they've done it this way for 20 or 30 years is just difficult. The quick personal anecdote I'll share with you on this is when I first took over at MIOX, I'm in the water industry, I had the opportunity to, I was invited to go to a trade association where there were going to be executives, about 30, from other water companies, from really small to GE. Actually, I think there was actually very few small companies. They are mostly GE and Siemens and ITT and people like that. So I jumped at to chance. It was in the Chicago in the middle of the winter, but I really want to go network with all these fellow executives in the water industry. When I got there, we did intro's. And within about ten people, I realized two things. One was everybody else knew everybody.

So all of the people in this room know everybody else and I'm the new entrant. The next least experienced person in the industry had 26 years. So you can imagine this is a little bit like oil and water and they had some ideas and some tenets that I didn't buy into. And I had some ideas and tenets that they certainly didn't buy into. So it's just that momentum of change. So with all of that, before I get into the questions, I just want to contend and post to you that I think the positives of clean tech far outweigh than negatives. And for that same reason that same compelling reason to want to make a difference. When you start an endeavor, whether it's a clean tech endeavor or it's an IT, SAS company, whatever it is that you think you want to start up, it is going to be tough. There are going to be days where you think the whole world is conspired against you. There are going to be days like I have where I get out of bed and I think, "Oh, my God! We're heading off a cliff." It's just the way it is when you have a small enterprise that's very fragile.

It's those reminders that you get from time to time that keep you in the game and keep you fighting and keep you working crazy hours and traveling all over the world, et cetera. Sometimes it happens in the form of a key customer win. We've had some of those and actually I was fortunate to have a really good stretch over the last several months. We'll get a big order and you breathe the sigh of relief. They usually last about an hour or two and then the investors remind you that's now the new expectation. But sometimes you just get reminded of this when other people come in and see the value that you can bring. The last story that I'll share with you was a few months ago. Actually I guess it's now about six months ago because it was in 2009 when things were still kind of shaky for us in terms of some of the customer's orders that had been delayed. We got a house call or a company call from a doctor. And the situation was this is a personal physician of one of our employees whose spouse was pregnant.

And they explained what MIOX was doing and the doctor said, "Hey, I'd love to come in and just a get a tour." This doctor came in and was looking at some of our new products, and she remarked to the employee who's giving the tour, "Wow! You must be really proud to work at MIOX." And I was kind of standing over there. It's in our labs. So, it really caught my attention. I thought well, that's an interesting comment. I wonder how my employee's going to respond. They looked at the doctor and they said, "Oh, yes! I am very proud to work at MIOX. But I'm curious; why do you say that?" And they said, "Well, I became a doctor to save lives and I can do that one at a time. But the products that you've created and are creating can save thousands and even millions." So talk about the energy recharger. So with that I want to have Q&Aand I took a few more minutes than I thought. But I want to close just formal remarks with a quote, and it's not from the clean tech company.

It's actually from the company I worked with for a number years as Tom mentioned. And this is the only slide I'll read which is, "Don't be encumbered by history. Go and create something wonderful." Bob Noyce certainly did that at Intel. It's one of the things I'm very proud of; it was my time at Intel. It really in my mind, it wasn't about PCs, it was about enabling people to get information. So with that I'm going to stay away from the Notre Dame side - No, I was kidding. I just want to have questions and discussions and we have a few minutes. So what do you guys think about this? So I know one of the problems with third world countries and water infrastructure is maintenance. I was just wondering like what sort, I mean obviously it doesn't look like it requires much maintenance, but I was just wondering. Yeah, the question is our product or water systems in general can

require maintenance.

In the developing world, what is that look like? One of the neat things about our product is the only source, feed stock it requires is salt. And salt is pretty ubiquitously available. It wasn't always that way. But today, you can find it just about anywhere. Then the ongoing maintenance of the systems can be very simple. It doesn't work that way in our high-end systems. But we do have units that are really designed to run off of solar, that are really designed for that type of environment and require very minimal maintenance. But you still want somebody to watch the system to continue to make sure you're giving it an examination and taking care it if you will. And that's one of the reasons I like this Honduras example. There's countless examples of people not just in water but in other areas solving somebody's problem and walking away and six months later, that problem's right back.

And that's really one of the fundamentals I believe in. You have to couple this with micro enterprise and other things to get people to really change their behaviors, but from the technology standpoint, it's pretty simple. There was a question over here, yes. How do you align your corporate strategies with non-market factors? I guess there are a lot of some other issues that within the industry and you have to be really cautious and work on that. Let me repeat the question to make sure I understand it as well. So, how do we deal in our strategy with non-market factors? Yes. I mean how you align your corporate strategy? And well, let me give you an example. You can probably have governments of the world to look into your product and try to make a better life for their citizens. How do you ever thought about that? Yes, we have. I think your question when I heard the second part is, would we, for example, look at a government-related opportunity that may not be as lucrative as industrial opportunity? We do that all the time.

We're very conscientious that it's a balance and that if we don't grow the company, our ability to have resources is limited to go do some of the other things. But I'll give you two examples. One post-Katrina, we had a lot of employees; I was not going to say to them. They just came together and said, "We want to go help." And how we did that was we donated a small amount of equipment, but our partners, our distribution partners and others bought our equipment to go donate. And then we want a step further and we said, "We've learned this from previous disasters when we help post-Katrina, post-tsunami in Indonesia. It's not enough to get our equipment there. You actually have to make sure somebody is using it. So in the Haiti situation, we partnered with key organizations that we knew could get the equipment from the plane to the hospitals to actually put it in use. So it did take a lot of time and energy but we were just channeling that energy. Another example for the government, we actually just sold 170 systems, so there are 170 communities in Mexico, one of the poorest regions, that will get state of the art water treatment.

But the government was one part of it and a key corporate player partner, a Coca-Cola bottler was the other group in making that happens. But we do I mean... Is it an important one? It is an important part of it. You're investors always going to push you to do what's the best utility of the resources that you have at hand. But you always have to look at in terms of it's not just a one-time deal. You're going to have ongoing opportunities. A lot of these relationships, what we're doing, we call it "doing well by doing good". When we're doing something that may seem to be very humanitarian or social in nature, it leads us to some really phenomenal business opportunities. I think people forget that. It's not an either/or.

And I wasn't around then, but when I hear about Hewlett-Packard and how it started, it really had that same kind of mindset. It's not just about the profits, it's not just about the impact. You really have to have both pieces kind of working together. Sometimes you have tough tradeoffs. But I would have loved to have donated more equipment to Haiti. But the small amount that we did, I know it impacted probably hundreds and thousands of lives. So, great question. Is MIOX playing a role in reducing water consumption as well as expediting experienced technicians? It is. The question is, "Is MIOX playing a role in I'll call it water reuse?" I'm not sure if that's the term you used. Reducing consumption...

Yeah, it's part of the same equation and to be clear, I can think a couple of examples where we're actually reducing water usage. I'll give you one. In the beverage example, that picture wasn't of this particular part of the process but we have now bottlers of sodas and bottled water who are using our systems to sterilize their process; clean in place, if you will. And by using our systems, the can do this in 15 minutes instead of 45 minutes and that's 30 minutes of water that they're not flushing through the system that's also heated up. So we're reducing water usage in that case. But more often in to your question: we're using water reuse systems. That instead of taking water in and dumping it into the environment, what folks are getting smart about is taking that water and using it, retreating it and then using it for other purposes. We have a Hyatt resort that I love to talk about because it takes water, treats it with our systems, saves tremendous energy as well as water because they don't have to pump that water from one place to another. They already have it. They just use our systems to treat it.

And then they water the golf course and all the other agriculture on the property. When you do the economics on that it's amazing, because it's not just the chemical you're saving. You don't have to pump the water, which is really one of big energy consumption aspects of water. And increasingly that part of our strategy coming forward, quite frankly. You'll going to see us on water reuse systems even capturing rainwater, harvesting, and making it safe, a big area of opportunity. Does that answer your question? Next in the back? What do you say as the main obstacle in deploying this technology worldwide to places where they

don't have drinking water? Is it pricing, is it accessibility, is it government policy? The question is, "What is the limiting factor to getting this deployed worldwide and even more aggressively?" You can be my board of directors. I get that question all the time. There's really a couple of things; some of which are in our control and some of which are not. The one that's in our control and working very aggressively to deal with now is, it's about finding channel partnerships. I'll give you an example.

We had really good success in the US and in Mexico in beverage, which I talked about earlier, a couple of times. And then that same corporate player said, "We love this. Now, we want to go take this to Europe and East Europe and other places even in the Middle East." And we said, "Whoa, we're not prepared to do that just yet." And so we had to go find partners, and we're in the process of doing that, who can actually install and maintain. So it's not just the sales component, but you actually have to have somebody who installs the system and maintains the system, et cetera. And so, it's really having those kind of channel partners, if you will, in place. But our strategy has been find the customer prove that the application works and then let's bring the channel partner, the distribution strategy to the table where somebody sees there's a real opportunity and there's customers who want the product. Follow-up question? Yeah, so presumably that's going to be companies like GE or Siemens who already have existing channels in those countries, right? Have you thought about licensing technology to them? OK, now I'm getting to get worried that you're actually sitting in our board secretively. The question is, are we actually talking to large players like GE and Siemens about license in the product. And indeed we are. Not to be specific about it because this is work that's still in process.

But, yeah, for us we know that we cannot get to all these markets simultaneously. And that one of the best ways to do it might to license as well as to provide distribution access. Siemens is a company we're very close to. Several of our key executives and one of our board members were part of Siemens now work at one stage. But we talk with all those large companies. That is the key part. And that's one of the issues of scaling up a clean tech company, right? That also gets that earlier comment that I said. People like to buy from people they know. And clean tech industry - industries in general -because of that momentum factor I talked about, it's even more important to think about who you're selling with or through because their brand name actually means a lot in some cases. Not just because of who they are but because people are resistant to change.

But if it's good enough for GE, or if it's good enough for Violier, or it's good enough for Siemens that it says something about the product quality. So that is a big part of the strategy. Yeah, in the back. Just curious how you think about, in your sector in the clean tech industry, you're in a sector that you have the ability to have a technology that can be tested in a relatively low capital-intensive manner relative to the rest of clean tech. I'm just curious how you think about, in terms of actually testing the technology and where you want to focus and you've thought about those two things in the sense of it could cost a $100 million to test a brand new solar technology. It still has the same binary outcome of go or no-go versus something where you can test it in a small scale. So when you say you encourage, when you think of like long terms sustainability in the next step of the sector, can you comment on how you think the rest of the clean tech industry takes that step? Sure. I'm going to repeat the question. I may modify a little bit. So give a liberty if I'm not answering this, let me know.

I think the question was it seems like and I think if this is your assertion this is correct, that our technology isn't as capital-intensive to test in terms of development of the technology. It actually has a lot of rigorous testing though in the sense probably more than is apparent, because it goes into EPA drinking water standards. And so the military tested this extensively for us to have public drinking water system usage here in the US, there's a tremendous amount of regulatory oversight and hurdles that you have to go through. So it is a very rigorously tested device probably much more than solar and hydro and other energy-related clean tech devices that I can think of in terms of is it certified, if you will, by the relative agencies. The other part of your question I think is spot on, which is to develop the technology wasn't as capital intensive as say, developing a new solar fab where you not only have the technology issues to deal with, you also have the capital-intensity associated with ramping up production. And I think that's one of the things that the investment community is coming face-to-face with in clean tech very quickly is if you look at the way venture capital community is set up - for the most part, and there are few exemptions - it's really set up to take smaller bites at the apple, five million. Let's see this with a couple of hundred thousand or a million, get to proof-of-concept, and put a couple million in, they we'll get the revenue, then we'll put a couple more million in. You have ten million in for the company that, if you're Facebook is worth billions, but if you're kind of a normal trajectory, maybe you're worth two or three or four or five times that. Good outcome. And you look at a solar company, which might take 200 million at an extreme case to get ramped up, and then only to find out you're not cost competitive, et cetera.

That's a really big investment chunk. And I think that is already played itself out to some degree. And the investment community is getting more thoughtful about how to either share that cost with either large companies or governments or others. Or how to figure out novel ways to get the proof points quicker and more inexpensively. But that is one of the big hurdles in clean tech is, you just got to look at the money in versus the money out. If the bet is a billion dollar bet, it better be a $10 billion potential return, because it doesn't make sense otherwise. But it's a great question, a great observation about clean tech. I've got a question for you on pricing. Can we just go back to, I think it was your second slide, where you had the treatment system that the company had installed? And you said that the payback time for that system was less than a year, and that the company had an 80% reduction of cost over a five-to-seven year period. But you also said during you presentation that the

selling point for your product is that it's better quality, better quality over the current existing systems.

So I'm really wondering about the pricing question. The question is, if we provide this payback period of a year or two, or we save huge cost over the life of the product, at the same time we're offering quality enhancements and safety enhancements. You didn't say it, but I'm interpreting your question to me. Are we maybe leaving money on the table around pricing? And the answer to that is sometimes just to get the product into a new application in your customer base. So we are aggressive in our pricing in some ways, we want to pass a lot of economic incentive, if you will, to the customer. But there are other times where flat out that's not the case and we'll structure the deal in a particular market where we know there's a really strong need and we can price accordingly. But yeah, you have to give an economic incentive and the longer or more entrenched the industry you're trying to displace, the bigger that price advantage has to be. I have a rule of thumb that was given to me years ago by somebody much more successful than me. He had I think six or seven successful IPOs at the time. And I was the CFO and he's the CEO.

And he said, "Look, if you want somebody to change their behavior, you've got to be twice as good at half the cost." It's not enough to be twice as good at the same cost. You have to be twice as good at half the cost, which kind of gives you a rough 4X better mind set. I'm not sure if you can distill everything down that way. But I truly believe that if want to get more than the early adopters, more than those first few folks...and there are some, some people who actually pay more if they realize there's a benefit. Some of our early customers were like that. They didn't get any economic payback, but they knew they had a huge safety benefit or they had a concern about the environment or about their worker's safety or whatever it might be and still paid that premium. But that's not how you get the mass markets. I think a couple more questions, Two more questions. I'll get to you one second. Yes, in the white.

Could you explain how the company was founded? Did you tinker in your garage? Did you get a license, let's say in Stanford or... I was hoping to avoid that question. No, I'm just kidding. It's a great question. What's the origin of the company? How did it start? Was I tinkering in my garage kind of like Steven Steve with Apple? Or a lot of these stories we read about. The simple answer is no. I'm actually not even the founder of the company. The company itself started many years before I joined it. It was really a bunch of ex-Los Alamos Lab scientists who were working for the government doing some novel research funded by the Department of Energy and the military. They came across this technology and this product, and they started doing what good engineers do.

They started building some and selling some and building more and selling more. I came across it and it was very much focused at military and government applications. And so one of the things that I kind of think about as a parallel, I didn't say this earlier but in the market sense, I think one of the reasons we may really succeed in a phenomenal way, is we're kind of like a cellphone is to telecommunications in water treatment. We take the whole equation and we push it out to the end user and we give them the power to create what they need when they need it. But to your origin question, we're kind of like lithium batteries. If you'd look at a lot of technologies, they started with real military applications, and then eventually found their way into the industrial, or commercial sector and then ultimately even in the consumer sector. And we're kind if following that path. The technology did incubate for a number of years. So it's not quite as sexy as I was sitting there with a couple of really smart folks and tinkering. I came across the company intersected at the time where it was really looking to go a commercial path, and I got very excited about it.

So last question. Two questions, so the last two questions. One is certainly to help for me to get some ideas for social entrepreneurship, so I'll ask that one first. What is the largest growth area for water technology? For me, it's in desalination but I'm wondering...that would probably do the most to take care of the stressed points. I'd like to hear your thoughts on where the largest growth - not on where the largest market is today, but where the largest growth area with this technology is going to be. Let me answer that one first. You said you had a second one or maybe a part B to that. I think the questions is, from an environmental impact and water specifically, isn't desalination one of the biggest opportunities to unlock water and make it more available and to solve scarcity equation? My short answer is no, which might be surprising. But it's not that desalination doesn't have a play. But you have to remember and start from the big picture.

The world has plenty of water. Ninety-seven percent of it is tied up in the oceans, about another 2% is tied up in glaciers and ice caps. And so of the total available water, only 1% is kind of available for us to use. So a really easy way to think about unlocking more is go to the ocean and desalinate. Well, there are two problems with that. One is it's very energy intensive. Even today with some of the technologies, you have to put even more energy in to get that water. And then if you want to take it any place besides the coast, you have another issue. But for a moment, let's just say there's a lot of problems you can solve on coastal cities with desalination. You also have to do something with that brine.

And that is an environmental issue. And I think I am pro-desalination and we have some of our systems that sit behind desalination plants to do the final disinfection. But today's desalination technologies as they are, are certainly not enough to solve the problem. And we have to think about the consumption side and the reuse side. Because it's actually a lot cheaper to take water that you use once and then retreat it for use than it is to take salt water and make it ready for use. It's just much

more economical. So desal has a play and I think there some really exciting desal companies and folks who can do it with less money, which is less energy. That's part of the equation but you also have to solve what do you do with the brine that you get from that. And pumping it back into the ocean has a whole set of issues and implications as well. One quick question and we'll go ahead and take it offline.

Do you have a second? Yeah, I have one. On the competing technologies just like you mentioned Siemens. I think they're doing like really something ozonation and I just read that In New York City, they just did a big UV installation or something like that. How does your thing complement or compete with the UV and ozonation? You obviously know a lot about water treatment. You know more than the reporters I was talking with last night, so that's good. There's a lot of technology that do water treatment, from filtration, and desalination is kind of an ultra filtration or reverse osmosis process often. UV and ozonation and others are attacking the chemical side of the equation and replacing it with a better solution. There are some systems where we are behind UV and help to keep UV free from or operating better, or sometimes we actually because UV can do some really nice things without chemical, you still haven't solve the whole equation because you haven't prevented the recontamination of that water. And so ironically, in the US at least, UV is a really strong play in waste water. It really doesn't have as strong a hold in drinking water because it doesn't prevent the recontamination.

But UV is a great technology and again, like desal, if any of you are going to go create a really low power UV solid state system, I'd love to talk to you because we can probably put it to good use. And we are partnering with a lot of UV companies and we partner a lot with membrane companies. Actually, no ozonation companies right now. But we do look at buying one once... Well, thank you fellows.