

Green Technology Devices for Labs to Wash, Sanitize and Dry Plastic Consumables for Reuse and Recycling



Ali Safavi
President & CEO

CEOCFO: *Mr. Safavi, the tag line on your site is Rethinking Laboratory Waste. What is the approach at Grennova?*

Mr. Safavi: For over half a century in the U.S. and overseas, one laboratory practice has stood the test of time despite countless advances. This practice is bringing consumables into the lab, running the respective assay or procedure using consumables one time, and then discarding them directly to waste whether that be biohazardous waste or otherwise. Biohazard waste bags tend to be autoclaved or get burned down. Incineration releases pollution into the air or after the autoclave they end up inside landfills. This has caused huge, significant, unnecessary pollution that labs have been producing for many decades. The reason we have such a huge waste is because as the biotech industry has been booming and growing, the concept of “high throughput” in regard to labs has evolved. To explain, over the last ten years daily research or sample testing volume has increased steadily because of the capacity made capable by automation. At the beginning, volumes were somewhere along the lines of one hundred per day or maybe per week. However, right now based on industry quotes and technology, high throughput volume easily refers to a figure of thousands or tens of thousands of samples per day. Plastic consumables were introduced to the labs based on the sample volume at inception. However, as the industry grew and consumables usage grew in parallel, no one has done anything about it. Therefore, both the spending on consumables and waste coming from their usage grew along with the industry.

CEOCFO: *How are you addressing the problem?*

Mr. Safavi: We are the first company that has developed a green technology device for labs that enables them to wash, sanitize and dry consumables for reuse purposes in a high throughput environment. It gives labs the ability to reuse their plastic consumables as many times as they're able to under their own procedures, and then recycle rather than discard them.

CEOCFO: *With so much focus on the environment, how do you get people to understand that it is more important to reuse and it is safe to reuse, rather than embracing the ease of throwing away?*

Mr. Safavi: The first objective is to catch their attention. The second part is how to prove or how to show them that there is no cause for concern with reusing consumables. To address the first objective, we should look at how much waste is being produced. For example, just for pipette tips, which are commonly expressed items in most every single lab. They are conical shaped plastics that you transfer liquids or samples with. They do not weigh that much and they cost roughly about seven to eight cents for each tip. However, it has been reported that in 2010, about four million pounds of these pipette tips were discarded to landfills. This number does not include how much actually gets thrown out and causes air pollution. Based on industry growth, we can safely extrapolate that figure to roughly five million pounds in 2015. Five million pounds of pipette tips is the equivalent of discarding about one hundred eighty million bottles of water annually. If you were to line these pipette tips up end-to-end, the distance would circle the earth six times. These are huge, significant contributors to pollution. By recycling one ton of plastic rather than throwing it away (and having to create it from scratch) you save 5,774 kilowatt-hours of electricity. Based on the number of tons of recycled plastic from five million pounds of tips, the amount of energy saved every year would be sufficient to power over two hundred thousand laptops or over thirteen hundred homes in the U.S. annually. That is just for one type of consumable. I haven't factored in the plates or even bigger consumables. How do we know consumables come out clean by using our system and how do we know it is ideal to reuse the used pipette tips? The pipette tips are made of very high quality polypropylene plastic. They're made of high grade material to potentially withstand harsh reagents. Therefore, just like any other high quality plastic you do not just use it one time and throw it away. You can reuse it. However, the next question is, “How do you know it is clean?” “How can you sanitize it?” That is where our device comes in.

Our device, TipNovus, is a technology that can wash, sanitize and dry tips making them available for reuse. To answer the question, scientists or researchers prove the efficacy of the system just like any other device that they put in their lab. They have to validate the system. For validation they always have to have a reference point as a control. The control is a brand new consumable. In our experience, the way customers have validated the system is through comparing the results from the washed tips to brand new tips in each respective assay. For example, we have contaminated pipette tips with whole blood, with plasma and with different sample types. Then we put it inside of our washer. We cleaned it, we dried it and then we ran a set of samples with those washed ones, as well as the same set of samples with the brand new tips and the correlation between results is very strong, suggesting no difference. We have also done human genetics studies both internally and externally as some of our customers perform product demos. Testing for DNA is arguably one of the most sensitive tests to run. What they have actually found is the washed tips coming out of our system outperform the brand new tips. The reason for this is because what most of the industry uses in terms of pipette tips are not necessarily sterile. Just because it is sealed and it is brand new that does not mean that it is sterile, it was just produced in a facility labeled as "RNA/DNA free". Our system can actually wash, sterilize and dry the tips. Therefore, when genetics testing has been performed comparing washed tips with the brand new tips, washed tips consistently have fewer undetermined calls. To explain further, brand new tips have expressed more random calls which are basically genetic material that they could not trace back to the sample. Again, we do not put a system inside the lab and say, "Plug it into the wall, throw the consumables in there and start using it." In addition, labs aren't simply washing the tips once. I have just found out recently that there are some genetics labs that are aiming to validate washing and reusing these pipette tips up to fifteen times. They have already passed ten times and they see that the results come back still as good as the brand new tips.

"We are the first company that has developed a green technology device for labs that enables them to wash, sanitize and dry consumables for reuse purposes in a high throughput environment." - Ali Safavi

CEOCFO: *That is quite a savings!*

Mr. Safavi: Yes! The cost is roughly eight cents per tip on average and might not seem like much, but you have to think of it in terms of every sample. By the time a sample has gone through all necessary transfer and testing, it may have needed anywhere between three to fifteen tips. This adds up significantly when you're running hundreds to thousands of samples per day. In terms of consumable companies, they have not done much about it. This just equates to more revenue for them.

CEOCFO: *Would you tell us what else is available from Grenova?*

Mr. Safavi: Our first product is TipNovus™, which is a high throughput tip washer. It can wash and sanitize anywhere from twenty to twenty-four tip racks every hour. TipNovus is mainly targeted for medium to larger sized labs. Also, there are many labs in academia or smaller labs that use hand pipette tips. They may not use as many tips as bigger labs, but they still produce a lot of waste. The amount they go through in terms of these consumables adds up to a formidable cost. By the end of 2015 we are releasing TipNovus Mini, which is a smaller version and more economical system. It is ideal for academia and lower throughput labs. This way they can also save and reduce their waste.

CEOCFO: *What is GrenoClean™?*

Mr. Safavi: GrenoClean is a cleaning solution that we have developed. Through testing, we have determined it works ideally for most applications in order to remove contaminants and ensure washed tips are on par, if not better than brand new tips. It is a stabilizing buffer made of a formula that works without damaging the tips and without causing pollution to the environment. By using GrenoClean, labs can be assured the system will function for the long run. The PH of liquid waste that comes out of the system has been measured and verified between seven and eight. Also, the liquid waste coming out of our system is exposed to the same purification and germicidal UV lights as the consumables, which inactivates biological and biohazardous materials, making it safe to be disposed of down the drain.

CEOCFO: *Do many of your customers take advantage of the product or is that a growing area for you?*

Mr. Safavi: It is a growing area for us. It has been an interesting ride. We made it available to the market in January of 2015. The response that we got from everyone was, "Wow, this is great, but how do I know the tips are clean?" For the past six or seven months we have been heavily trying to answer the questions, provide demos and present the system for testing and prove the results. Many customers have experienced the results for themselves and now they are in the process of purchasing. There are some systems available for purchase, but there are many more in the forecast for 2016.

CEOCFO: *How do you reach potential individual customers or industry sources as well?*

Mr. Safavi: Conferences are a major source of reaching out to labs. However, word of mouth and educating the young generation (the upcoming graduates) are important. The new generation of scientists are the ones who have not practiced

the old traditions of labs, like using consumables one time and throwing them away. They are coming out fresh with a new perspective. They are also more open to green technology and rethinking and reinventing the current model. I have approached so many young candidates and educated them on our product, told them about the benefits, and explained how the current model has been the case for many years. Those new candidates come to the lab and make their managers and colleagues aware of the new technology. The biggest challenge for us is that we are trying to introduce a new culture to labs so they can be more sustainable and reuse consumables. Members of the young generation are the ones that are letting the staff know how wastes can be addressed differently.

CEO CFO: *Are you funded? Are you looking for partnerships, distributors and additional funding?*

Mr. Safavi: Yes, we are funded and always look for good strategic partners and additional funding in order to expedite our R&D to release more Grenova washing devices for all different types of laboratory consumables. As of right now we do direct sales. Again, this is a new, upcoming kind of technology and mindset. The reason I choose to go directly is because I want to make sure that I will be in contact with every single potential customer. Whoever is giving it an opportunity to be in their lab will be able to have their specific questions answered. We'll be able to present what Grenova stands behind as well as what our intentions are, rather than going to distributors and trying to push something without offering the details. Right now we are doing direct sales, but we are open to working with distributors. However, I will say I am very selective. I want to make sure that the distributors are educated and they are as passionate as we are about Grenova's product line.

CEO CFO: *Why pay attention to Grenova? What sets the company apart?*

Mr. Safavi: We are state of the art. We are the innovative solution for labs. We are the future of consumable solutions. I think every lab, as the industry grows and wants to advance more, can look at Grenova. If they want to cut down on waste output they can look toward Grenova. If they are looking for innovation they can look toward Grenova. Labs worldwide in any industry could be Grenova's customers because every lab uses some sort of consumable. At Grenova, TipNovus is our first product. We have a series of products in our R&D pipeline that we are going to be releasing in upcoming years for cleaning and sanitizing other types of consumables.

CEO CFO: *Final thoughts?*

Mr. Safavi: My ultimate vision is that the labs will have their own automated consumable cleaning facility. They will walk in with the biohazard bag. They will remove the contents and everything gets washed, cleaned, sorted out and packaged up for the next day. After reusing the products the number of times the SOP allows, they'll be recycled. That makes it so labs approach one hundred percent sustainability.

Interview conducted by: Lynn Fosse, Senior Editor, CEO CFO Magazine



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**For more information visit:
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