

Alyssa: Welcome to our podcast, The Jory Fanclub!! I'm Alyssa, a first year PhD student in the Marine, Earth, and Atmospheric Sciences department at North Carolina State University.

Catherine: And I'm Catherine, a graduating Masters in Biomanufacturing candidate also at NCSU. Today we're going to be talking about a fun topic, single use plastics and how the use of them in pharmaceutical manufacturing affects the environment.

Alyssa: I'm sure all of our environmentally conscious listeners have used single-use plastic before. From plastic straws and silverware at your favorite takeout restaurant to plastic bags at every major store, we can't seem to get away from these items.

Catherine: I know I am SO guilty of bringing a Dasani water bottle to class every week, just out of pure convenience.

Alyssa: Exactly! Single use plastic was introduced for its convenience along with other benefits. Plastic cutlery was created as a cheaper alternative to metal silverware. Plastic bags were introduced to limit the number of trees cut down for paper bags. And plastic packaging around our food keeps it fresher while lessening the likelihood it becomes contaminated while being transported.

Timemark #1: 1 minute

Catherine: So obviously this is a major part of our lives. Since you have the background, do you have any insight on how this steady use can or will affect us?

Alyssa: Definitely! There has been an outcry from environmentalists over the years to limit our dependency on single use plastic. This plastic is obviously an eye sore when you see it discarded around your favorite park or beach. In North Carolina, those by the Outer Banks are concerned tourism will decrease in heavily polluted areas, because who wants to visit a beach full of plastic? Not to mention, plastic is harmful to wildlife who mistake it for food. We also know all of our plastic sits around in landfill for a very long time. It is understandable why environmentalists want to limit our usage of these items. Doing so will preserve our favorite outdoor recreation spots and limit how much garbage we send to landfills.

Catherine: So if it just sits in a landfill does this mean it isn't ever going to go away? Cause that is super alarming that there would be just a pile of trash sitting there forever and the use of the plastic is basically permanent.

Alyssa: That's a great question! It really depends upon the plastic item, but they can take upwards of 1,000 years to decompose. Most of the time, the plastic truly doesn't go away but breaks down into tinier and tinier pieces. This is known as microplastics and will be the topic of our next podcast episode.

Catherine: I think this is all so interesting because from my background in pharmaceutical manufacturing we love single-use plastics and that's the way we are moving forward. But before I play devils-advocate, we wanted to take a quick break and hear from our sponsors. Yes We Can! Is a service for those who struggle with the usage of school websites, including Moodle. Yes We Can! Offers 24/7/365 customer support with live agents to help you get your Moodle site up and running before classes start. They also offer proxy services where you can send your syllabus and they'll update it for you. If you use code 'JORY' you'll get 50% off your first month. Thanks again to Yes We Can! For sponsoring this episode!

Time stamp: 2 minutes

Alyssa: So before that sponsor break, Catherine, you mentioned how pharmaceutical manufacturing, aka biomanufacturing companies, love single-use plastics. Can you tell us a little bit more about that?

Catherine: Yeah so when we make all of your drug products, from vaccines to your normal bottle of Tylenol, we are trying to make it in a safe and effective way. A big concern in our industry is contamination. You as the customer are relying on the manufacturers to ensure your bottle of Tylenol is just Tylenol and that nothing else extra is in there. The process is so long to make that bottle of Tylenol that there are a ton of opportunities for that batch to get contaminated, which could kill someone. So the industry is moving more towards single-use materials during the production process because it comes out of a sterile package and is disposed of right after use. This really has changed the game on making contaminate-free, aka aseptic, products.

Alyssa: So biomanufacturing is reliant on single use plastic to make sure my medicine is made safely?

Catherine: Yep that's pretty much it. There are other major benefits, including simplicity in setting up the equipment because it comes pre assembled so it remains aseptic. Single-use plastics really take out a lot of complications in an already complicated and long process. This also reduces manufacturing times so you get the medicine quicker. When the pandemic happened obviously we wanted the COVID-19 vaccine to come out quickly and a lot of that was due to single-use plastics. It's unfortunate that my industry is moving there but it really has opened up a lot of doors for newer products to come out including RSV and HIV vaccines as well as new ways to make it easier to ship products to 3rd-world countries.

Alyssa: I think we're at a crossroads here. Biomanufactures depend on single use plastic, but single use plastic also pollutes our planet. What is the compromise?

Catherine: I think on a personal level it's our job to try to reduce our everyday plastics. Obviously this can't be eliminated from my field but if it isn't used in every facet of our lives we can make room for single-use plastics to be used in the most impactful ways. Like making drug products! What do you think?

Alyssa: I think that sounds great. For our listeners who are looking for some ways to limit single use plastics in their everyday lives, I have some tips for you. Whenever you shop, bring your own reusable shopping bags. Keep some in the back of your car so they are always on hand! Keep an eye out for local trash pickups at your favorite recreational spot. There are probably a bunch happening near you for Earth Day.

Catherine: That definitely sounds doable, especially in 2024 where we're much more educated on all of this. Glad you also mentioned Earth Day, which is April 22 so coming up soon! I know we also can also invest in a metal waterbottle. Notice how I said A meaning ONE folks, you don't need 5 Stanley cups. Well looking at the time that's all we have for today! Thanks for listening, and as always don't forget.

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