KRISHA: You're listening to *Brains On,* where we're serious about being curious.

[MUSIC PLAYING]

CHILD: *Brains On* a supported in part by a grant from the National Science Foundation.

NARRATOR: Previously, on *Brains On,* Molly was visited by two spirits late one night.

GHOST SHOE 1: Molly, we're the ghosts of your old shoes. The ones you threw out.

MOLLY: Oh, my. Floating ghost shoes.

GHOST SHOE 2: We've come to tell you to do an episode about [INAUDIBLE].

GHOST SHOE 1: You'll be visited by three visions, one from the past.

GHOST SHOE 2: One from the present.

GHOST SHOE 1: And one from Hackensack, New Jersey.

MOLLY: What?

GHOST SHOE 1: Wait. Sorry, that's not right. Let me check my notes. Oh, it's one from the past, one from the present, and one from the future.

GHOST SHOE 2: Yes, the future. Ooh. Ooh.

[ALARM RINGING]

MOLLY: Huh? I'm awake. Was it all a dream?

NARRATOR: She thought it was all a dream.

MOLLY: I just said that.

NARRATOR: But then, Sanden stopped by.

SANDEN TOTTEN: Hey, Molly. This is my new invention. It shows you visions of the past.

MOLLY BLOOM: Jinkys. Just like those shoes said in my dream.

SANDEN TOTTEN: We can use it to learn all about the history of trash. Check it out.

MOLLY BLOOM: I am fascinated. And also a little freaked out.

[CREEPY MUSIC]

NARRATOR: Was it all a coincidence? Will Molly be visited by two more visions, one from the present and one from the future? Do ghost shoes smell like regular shoes, or do they have no smell because they are ghosts? Or do they smell worse because they are ghosts?

Also, is Hackensack a nice place to visit? And do you know any cheap hotels or a nice bed and breakfast there? I need a vacation. Find out the answer to some of these questions in the next episode of *Brains On,* which starts right now.

[FUNKY MUSIC]

MOLLY BLOOM: You're listening to *Brains On* from American Public Media I'm Molly Bloom, and I'm back with Krisha from Shoreview, Minnesota. Hi, again, Krishna.

KRISHA: Hi, Molly. Happy to be back.

MOLLY BLOOM: We are happy to have you here. Today, we're answering this question from Cameron and Mirabella.

MIRABELLA: We recycle and compost, but also have garbage. And we're wondering why we have garbage, in general. Also, do we have any new tools or technology that will help with having less garbage in the future?

MOLLY BLOOM: Last episode, we looked at the history of garbage from the early days when we barely left anything behind.

KRISHA: To the days we fixed things and reused things, but also threw other things into dumps or the water.

MOLLY BLOOM: We heard about early efforts to clean up trash in cities and how plastic made our garbage problem even worse.

KRISHA: And all of it was inspired by a creepy dream Molly had.

MOLLY BLOOM: Well, sort of.

KRISHA: So Molly, any more visits from those spooky shoes?

MOLLY BLOOM: Not yet. But sometimes, I think I hear them squeaking in empty halls.

[FOOTSTEPS]

Woo. So Krisha, what stood out to you from that first episode? Did it make you think differently about trash at all?

KRISHA: Yeah, at first, I was surprised that cavemen people actually made trash. And in the 17th century, there was a lot less trash.

MOLLY BLOOM: Totally. And did it change the way you look at the trash around you?

KRISHA: Yes.

MOLLY BLOOM: How did it change it?

KRISHA: I thought plastic was invented way before.

MOLLY BLOOM: Mm.

KRISHA: Yeah.

MOLLY BLOOM: Yeah, it's not been around that long, but we use a lot of it.

SUBJECT 3: Brains, brains, brains, brains.

MOLLY BLOOM: Today, we are looking at what we do with garbage now. We asked our pal Kunsang Dorgee to look into it, and he should be here any minute. Oh, I bet that's him now.

KUNSANG DORJEE: What's up, guys? Just got back from a landfill, and I brought some gifts for both of you.

[HEAVY THUDDING]

KRISHA: Uh, thanks. What is this?

KUNSANG DORJEE: It's a bucket of asphalt, of course. And for Molly, half of a Chia Pet. I have no idea how the sprouts managed to remain intact.

MOLLY BLOOM: Thank you. So how was your tour? It must have been awful.

KUNSANG DORJEE: It actually wasn't that bad. What were you picturing?

MOLLY BLOOM: Well, I was thinking you'd be surrounded by a sea of stinky garbage and seagulls and maybe some rats and visible stink lines.

KUNSANG DORJEE: Ooh, well, that's actually what we'd call a dump. Back in the day, people would go to an open plot of land and throw in whatever trash they had with no regard for the environment. Now we use landfills, and they're not like that at all.

KRISHA: How are landfills different?

KUNSANG DORJEE: Well, instead of one big mound of trash, landfills consists of a bunch of smaller mounds called cells. Think of it like a big ice tray. Each ice cube pocket represents a different cell, but instead of water, you're shoveling in garbage.

MOLLY BLOOM: Hm. Not sure how I feel about cubes of trash in my iced tea.

KUNSANG DORJEE: Before the garbage is put in, each cell is lined with clay, plastic, and pipes.

KRISHA: Why is that?

KUNSANG DORJEE: Well, imagine a bunch of old soda cans, spoiled yogurt, and rotten fruit all in one place mixed with occasional rainfall. You can imagine all that stuff might make a gross goo that would sink to the bottom. To make sure those juices don't get in our groundwater, the liners and pipes are there to act as a barrier and funnel.

MOLLY BLOOM: So what happens once the liners and pipes are put in?

KUNSANG DORJEE: Well, then we can begin filling the cells with trash. But remember, only a few cells are being filled at a time. And while the trash is being squashed in, other workers usually build new cells to use once the current ones are full of trash.

KRISHA: That makes sense. So what do they do once the cell is full?

KUNSANG DORJEE: When that happens, workers will cap it by adding more liners on top, as well as dirt and grass to shield it from the elements. And once all cells are capped, and the ice tray of garbage is full, the landfill itself is considered inactive. But that's not the end. Officials still keep an eye on it to make sure the landfill isn't hurting anything around it in the years after it closes.

MOLLY BLOOM: OK, so why did you visit one in real life?

KUNSANG DORJEE: Well, I found out that there was one in my neck of the woods, so I had to check it out. It's in the town of Manchester, Connecticut, and it's still active today. And this was my guide.

RAYMOND CARR: Hi. My name is Raymond Carr. I'm the Operations Manager here for the Town of Manchester Landfill. My day consists of building a mountain with trash.

KUNSANG DORJEE: This mountain of trash, or garbage mountain as I like to call it, was off in the distance. Along it were trucks driving up to the top to dump their trash. But before the trucks reach the summit, the trash needs to get weighed

[BEEPING]

When we weigh ourselves at home, we stand on a small scale big enough for our feet. But at the landfill, they have a metallic red scale big enough for a commercial truck. Basically, trucks drive onto the scale in order for staff to monitor everything that comes into the landfill. Not only do the staff keep track of weight, but they also check exactly what's loaded in a truck with cameras. And look over a waste-manifest form, which is a fancy list that says what garbage they're bringing in to make sure that nothing is hazardous.

MAN: What's the weirdest thing that someone's tried to bring into this landfill?

MOLLY BLOOM: Ooh, that's a good one.

RAYMOND CARR: Ooh, the weirdest thing. You know what we get a lot of that I find very interesting is old boats.

KUNSANG DORJEE: Ooh, OK.

RAYMOND CARR: Everyone has the boats at their yard, and they spent 20 years on them. It was fun, and then, eventually, it's to the point where it's not worth anything. And then, like I said, our big compactors break it down into basically toothpicks, like I said, so.

KUNSANG DORJEE: The trash coming in through the scale comes from commercial businesses, like construction sites, soil companies, and paving contractors. But everyday people also bring trash here themselves and sort it at a place called a transfer station.

RAYMOND CARR: This is an area where all the residents for the town of Manchester come in, and we have different sorting areas for all of their products. So as you could see, when we were coming in, we had mattresses. We had plastics. We had cardboard. We had old propane tanks.

KUNSANG DORJEE: The reason it's sorted is because some of it can be recycled. That stuff gets sent somewhere else.

RAYMOND CARR: I would say for the material that's brought into the transfer station, probably about 50% of it gets either recycled or repurposed in some way.

KUNSANG DORJEE: That other 50% goes right into garbage mountain, which is where we're headed next.

[ENGINE STARTING]

We drove up a winding dirt path for a few minutes. Finally, we reached the top of garbage mountain, where trucks were unloading their waste. Landfill operators call it the working face because it's a specific area of the landfill where stuff is being added and work is being done. My working face, on the other hand, consists of a stern stare and raising my right eyebrow, like this.

MOLLY BLOOM: Ooh, very professional.

KUNSANG DORJEE: Thanks. From on top of garbage mountain, we could see acres of trees, as well as a marsh trail along the Hockanum River. And, of course, underneath our feet was decades worth of compacted waste covered with fresh dirt.

MAN: We're currently watching as a couple of vehicles are unloading some trash. We have a D6 Dozer, which is pushing up the trash, and it will be compacted by one of our compactors.

KUNSANG DORJEE: The dozers he's talking about are tall, yellow trucks on continuous tracks like a tank. They have big shovels attached to the front. They move around the entire working face smushing the trash. And they're really noisy.

MAN: Our whole concept is to take in the trash, compact it down as tightly as we can, and then cover it up.

KUNSANG DORJEE: As I was standing there, it felt weird. I didn't know why, but my feet didn't feel that steady.

MAN: A lot of people that come up here for the first time, especially if a truck comes by, they don't realize the shaking of the ground. And I'm not sure if you could feel it right now, but because we're technically on trash, there's some give there.

KUNSANG DORJEE: As we continued walking, I also had another thought.

[SNIFFING]

It doesn't smell as bad as I thought it would.

[LAUGHING]

Turns out the lack of smell is not only because trash is covered with dirt but also because of gas collection wells stationed throughout the landfill. You see, when trash breaks down, it creates a gas called methane. It's a powerful greenhouse gas capable of trapping more heat than carbon dioxide. To keep it from getting into the air, Ray and his team captured the gas in gray pipes sticking out of the ground and burn it in something called a flare, which produces less pollution. That not only keeps the air cleaner and cooler, it also keeps the dumping site from smelling.

RAYMOND CARR: If the gas collection system was to shut down, it would smell like a rotten egg is what it would smell like, and I think we all know what a rotten egg smells like.

KUNSANG DORJEE: A fart. He's talking about a fart. Garbage mountain would smell like a giant fart, and nobody would want that.

KRISHA: Ooh, so that's why you don't smell that bad.

KUNSANG DORJEE: Exactly. My day on garbage mountain was actually really pleasant, and who knows? Maybe in a couple of decades, I'll be back, and it'll be turned into a park where I can dilly dally aimlessly.

MOLLY BLOOM: Thanks for stopping by.

KRISHA: Bye.

(SINGING) Ba, ba, ba, ba, ba, ba, ba, ba, ba, ba, ba, *Brains On.*

[ZAP]

MOLLY BLOOM: It's cool that he brought us presents. This old Chia Pet's cute. I think I'll name it Smush Face.

KRISHA: Presents. Present. Molly, Kunsang totally gave us presents and a vision of the trash in the present. Your dream is totally coming true.

MOLLY BLOOM: What? Oh, I guess he did. But it's just a coincidence, right?

KRISHA: I don't know. First, a vision of the past. Then one from the present. That's a lot of coincidence, Molly.

MOLLY BLOOM: It really is. OK, well, before any more mysterious coincidences pop up, let's deal with a mysterious sound. Time for the--

[WHIRRING]

KRISHA: Mystery sound.

MOLLY BLOOM: Here it is.

[THUDDING]

All right, Krisha, what's your guess?

KRISHA: I don't really know. It kind of sounds like the wings on a helicopter. You know, like it moving, maybe it taking off. I'm not sure.

MOLLY BLOOM: Mm. Mm-hmm. Mm-hmm. I will give you another chance to hear it and guess again in just a bit.

KRISHA: Stick around.

[FUNKY MUSIC]

MOLLY BLOOM: We're working on an episode all about superstition, and we want to hear from you. Superstitions are things that you might consider good luck or bad luck. Like something I do for good luck is when I go through a yellow light, I kiss my fingers.

[KISS]

And then touch the roof of my car. So we want to hear what are your superstitions, good luck or bad luck? Send them to us at brainson.org/contact. While you're there, you can also send us questions, ideas, mysterious sounds, and drawings. That's where we got this question.

EMERSON: Hi. My name is Emerson from Swanton, Ohio. I would like to know, if ants like sugar and sweet things, why don't they attack beehives?

MOLLY BLOOM: We'll hear an answer to that during the Moment of UM at the end of the show. Plus, we'll also hear the latest group to be added to the *Brain's* Honor Roll, so keep listening. You're listening to*Brains On.* I'm Molly.

KRISHA: And I'm Krisha.

MOLLY BLOOM: And this is the mystery sound again.

[THUDDING]

So last time you were thinking an airplane, maybe, something airplane related. Do you have any new thoughts?

KRISHA: Maybe like a helicopter.

MOLLY BLOOM: Mm-hmm.

KRISHA: I'm not sure. I think it's the same still.

MOLLY BLOOM: You're flying through the sky one way or another. That's the sound of a trashcan being taken out to the curb.

KRISHA: Oh.

[LAUGHING]

MOLLY BLOOM: So not flying through the sky, but moving, traveling. I think the air-- I think the sound of the traffic through you off.

KRISHA: Yeah.

MOLLY BLOOM: That sounded whooshy. But those wheels were rolling. And so you're not familiar with the bin because you take yours out to the dumpster, right?

KRISHA: Yes.

MOLLY BLOOM: If there's a sound associated with you taking out the trash, what would it be?

KRISHA: It would mostly be our steps, walking over them, and then a huge smack because we have to close the bin, and it sounds loud.

MOLLY BLOOM: Those dumpster lids are very loud and heavy. And throwing trash in rolling bins or dumpsters, it's easy for us to forget that every bit of trash we make still exists and has to go somewhere. It's much better to use less stuff and reuse things before throwing them out. Here are some examples from our listeners of how they reuse potential garbage.

[MUSIC PLAYING]

CORA: Hi. My name is Cora from Cincinnati. I like to take old shoe boxes and turn them into dollhouses. It is really fun on rainy days.

ROHAN: Hello, *Brains On.* My name is Rohan, and I'm from Minnesota. And we reuse as much as we can, like, making an old takeout box into a sun oven.

SYBIL: We have backyard chickens. Sometimes, when we have leftovers, we throw the food over the fence to our chickens. Then the chickens eat the food and give us eggs back.

WILDER: My name is Wilder, and I'm from Marietta, Georgia. One way I reuse trash is I really use my toilet paper and paper towel rolls by feeding them to my Guinea pigs to eat because cardboard is a part of their diet.

ASTRID: Hi, *Brains On.* My name is Astrid from Chicago, Illinois. We had a canopy tent up one night. The wind was really harsh. When we woke up, the canopy was on its side.

We recycled the metal and found that the tarp part was not ripped. With one piece, we can make a table cover for our picnic table, and with the other part, we can make covers for our two air conditioning units and our grill. We will secure the covers with bungee cords.

MOLLY BLOOM: A big trashy shout out to Cora, Rohan, Sybil, Wilder, and Astrid for sending in those ideas for reusing trash. OK, time to get back to our episode.

KRISHA: Right. We've got to wrap up with the vision from the future, just like your dream said.

MOLLY BLOOM: Krisha, it was just a weird dream. It's not like someone's about to barge in with a vision of the future.

[DRUMMING]

RUBY GUTHRIE: Hey, Krisha and Molly, I have a vision of the future to tell you about.

MOLLY BLOOM: Oh, hey, Ruby Guthrie. OK, you're right. This is no coincidence.

KRISHA: Let's just go with it. I want to see how it turns out.

RUBY GUTHRIE: Hey, y'all. I'm back, back, back again. And wow, did I have a weird dream last night.

MOLLY BLOOM: Of course you did. It was those ghost shoes. They planned all of this, right?

RUBY GUTHRIE: Ghost shoes? Pfft. That sounds completely wackadoodle, Molly. No. I just dreamed I started a Ska cover band called No Trout.

[UPBEAT MUSIC]

We got Lobster on drums, sea bass on bass, naturally, and Ruby on lead vocals.

KRISHA: Ruby, you really need to stop eating seafood platters right before bed.

RUBY GUTHRIE: Yeah, that's probably a good idea.

[CLEARING THROAT]

MOLLY BLOOM: You said you had a vision of the future?

[LAUGHING]

RUBY GUTHRIE: Oh, yeah, right. Well, I've been doing some research on the future of trash. And it really depends on the way we produce waste in the first place. Right now, the way we create trash is really linear, like a straight line. So you start at one end of the line, and you buy something, like your pair of shoes, Molly.

[CASH REGISTER OPENING]

And then you use them. And eventually, you throw them away, and they go to a landfill.

[DOZER BEEPING]

That's the end of the line. And what we need to focus on is turning that straight line into a circle. Meaning instead of the shoes sitting in a landfill, they get reused in some other way or are made of materials that can easily decompose and break down naturally.

MOLLY BLOOM: OK, but I already threw my shoes out. How will we deal with trash that's already in landfills?

RUBY GUTHRIE: That's a good point, and you're totally right. The trash in landfills is going to stick with us well into the future. But there's lots of researchers working on ways to help, like Jyoti K C.

JYOTI K C: Hello, everyone. I am Jyoti K C. I am a PhD candidate at the University of Illinois at Chicago.

RUBY GUTHRIE: So do you remember how landfills are covered with soil? Well, Jyoti is developing a layered soil cover that would help capture harmful greenhouse gases and all while using waste materials.

JYOTI K C: We are using this waste to buy products from the industries and then giving this sustainable cover system, which can remove all these harmful gases from the landfill and make our environment cleaner.

RUBY GUTHRIE: That's right. Jyoti is using materials that would otherwise be considered waste and using them to help capture gases. It all starts by creating soil that's super yummy for bacteria. That's the base.

JYOTI K C: The soil has a lot of microbes in it. or those bacteria in it. So some of those bacteria can eat methane as their food source.

CHILD: Mm. Scrumpdiddlyumptious.

[SLURPING]

[EATING]

Mm. Mmmm. Mmmm.

RUBY GUTHRIE: Normally, bacteria is already in the soil, but Jyoti makes it even better for them.

JYOTI K C: If we want to increase their number, we need to give them a favorable environment. So what we are doing is we are using this product or a byproduct called biochar, which is more like a charcoal.

RUBY GUTHRIE: It's made from burning organic materials, like yard scraps or waste from farms.

JYOTI K C: So that biochar, it has this property, unique property, which allows microbes to sit on it or because it has high surface area, and it also allows oxygen to pass through.

RUBY GUTHRIE: So the biochar gets mixed with the soil, and that's the base. This makes room for more bacteria to gobble up more methane.

CHILD: Gee, this methane is off the hook.

CHILDREN: Mmm. Excellent flavor.

CHILD: Brr. Mouth feel.

[SLURPING]

RUBY GUTHRIE: One person's trash is another bacteria's treasure.

CHILD: A tasty treasure.

[EATING]

RUBY GUTHRIE: But while the bacteria eats up the methane, they're releasing CO2.

[FIZZING]

CHILD: Oh, excuse me.

RUBY GUTHRIE: So Jyoti adds another layer to the cover.

JYOTI K C: And then on top of that, we are using this steel slag, which looks like sand. So steel slag is basically a waste material which is generated during production of steel. Generally, they are just thrown out, or they're stockpiled outside the steel plant, or they are sent to the landfill.

RUBY GUTHRIE: But that steel slag is filled with minerals, like calcium and iron. And these minerals react and capture the greenhouse gases, be it carbon dioxide or hydrogen sulfide. And it also helps capture the smell too. So let's review. First, you've got the soil and biochar.

KRISHA: That's for the methane.

RUBY GUTHRIE: And then that's topped with the sand-like slag

MOLLY BLOOM: For carbon dioxide and hydrogen sulfide.

RUBY GUTHRIE: Right, like a layered cake. Well, a layered cake that absorbs toxic gases from landfills, but I digress. Not only does the soil cover capture harmful emissions, but it uses waste materials too, getting at that circular way of consumption. And while we can help combat the harmful effects of landfills, we should still think of them as a last resort. There are lots of other ways we deal with trash, for example, incinerators.

[ELECTRONIC MUSIC]

Many countries, including Denmark, Sweden, and Japan, rely on incinerators, especially if they're tight on space.

[WHIRRING]

They take the trash. Then they burn it. And energy released from the burn generates power, which can be used to heat homes or supply electricity.

[ELECTRICITY ZAPPING]

MOLLY BLOOM: That way, you're at least getting energy out of the waste.

RUBY GUTHRIE: Right, and it reduces the volume of trash by up to 90%, which gives you more space. However, we're still burning materials, which creates air pollution.

KRISHA: So incinerators aren't a long-term solution, either.

RUBY GUTHRIE: Agreed. And don't get me wrong. These technologies and scientific discoveries are great, but the best thing we can do is consume less stuff, to begin with.

SINTANA VERGARA: Before we even talk about any particular technology, we should really think about why do we produce so much waste in the first place and how can we produce less.

RUBY GUTHRIE: That's Professor Sintana Vergara. She teaches environmental resource engineering at Humboldt State University. Sintana says when it comes to changing our habits, we should look to other cultures and older generations.

SINTANA VERGARA: If you talk to your grandparents or your great grandparents if they're around, they did not produce a lot of waste at all. They grew up in times that were very different from ours. They didn't buy as much stuff. When things broke, they fixed it.

RUBY GUTHRIE: Like patching up old clothes or repairing a piece of furniture. Santana also says when we're thinking about the trash we create, we also have to think about the people and the communities who are affected most by our waste.

SINTANA VERGARA: So unfortunately, a lot of times, the sites for places that smell bad or create air pollution have often been selected to be near people who are poor and near people of color who don't have as much political power. So it is really important, I think, to think and as we're thinking about making active choices about what we buy and what we throw away. Thinking that what we throw away doesn't disappear. It actually ends up near someone else.

RUBY GUTHRIE: Right. It's important to remember that a way is always somewhere and near someone. So changing the way we deal with their trash is important not only for us but for our neighbors and our community. Our trash can certainly be overwhelming, but it's important to remember that waste can be a resource.

MOLLY BLOOM: Like how Jyoti uses waste materials for the soil cover.

KRISHA: Or how incinerators transform our trash into energy.

RUBY GUTHRIE: Exactly. And you can transform things too. Maybe you make jewelry out of old bottle caps or sew all of your old t-shirts into one mega-fashion statement robe. That sounds pretty cool. Or you can always turn food scraps into compost for your garden.

CHILD: Somebody say compost?

CHILD: Oh, yeah, I could really go for some banana peel right now.

RUBY GUTHRIE: Oh, that reminds me, I need to go turn my compost. You know, before the bacteria gets hangry. Just remember, get creative, embrace, don't waste.

MOLLY BLOOM: Thanks, Ruby.

KRISHA: Bye.

RUBY GUTHRIE: See ya.

[UPBEAT MUSIC]

CHILDREN: *Brains On,* on, on.

MOLLY BLOOM: It takes lots and lots of people to make all the waste we put into the world. So a bunch of us need to work together to fix it too. When we work in groups, we can make big changes in what we throw away. Here's someone who's done that.

[UPBEAT MUSIC]

MABEL: Hi. I'm Mabel, and I live in Berkeley, California. I first got interested in zero waste and reducing my waste when I walked into my third-grade classroom on the first day of school. My teacher started the lesson in the day by saying that, as a class, we weren't going to have a trash can.

So my class in third grade fit all of our trash for the whole year, which is 180 school days into a one-quart Mason jar. It was really a team effort because if one person brought in trash, we had to add that to our thing. And so it was really our whole class working together was what enabled us to have such a small amount of waste for the year.

MOLLY BLOOM: There are lots of ways you can reduce your waste. In Mabel's classroom, they used reusable materials wherever they could, for example, metal silverware that could be washed instead of plastic silverware you throw away. And they used big shareable supplies, so they'd have to throw away less packaging, like a big refillable glue bottle, rather than plastic glue sticks that end up in landfills.

MABEL: Being in that zero-waste classroom really changed my life because it showed me how much of an impact we have on the world and the Earth. And it showed me how much humans have impacted the Earth, and the plastic waste that we produce really is very harmful. Try not to bully yourself or be hard on yourself if you do end up using plastic.

Because right now, in the US, in certain areas and most of the areas around the world, it's really hard to get completely zero waste because you're going to have to buy something eventually that has plastic. Or you're going to have to use something that has plastic. So I think really, if you're trying to limit your landfill waste, you should make an effort to be mindful about what you, as an individual person, what you're adding to the waste. And also educate others because then more people will be aware of the problem, and they will be able to help you achieve your goal.

CHILDREN: *Brains On.*

MOLLY BLOOM: OK. I have to admit that was all pretty uncanny how the episodes ended up just like those floating ghost shoes said it would.

KRISHA: You did tell the world about how we need to be better about what we throw away.

MOLLY BLOOM: Yeah, I guess I did.

GHOST SHOE 1: Molly, Krisha, it's us, the old shoes.

MOLLY BLOOM: Oh, they're real.

GHOST SHOE 2: You did a good job. But there's one more thing.

GHOST SHOE 1: Yes. You told your listeners to help by recycling, reusing, and, most importantly, reducing their trash.

GHOST SHOE 2: But also tell them poor cereal into your shoes.

GHOST SHOE 1: Yes. Pour cereal in us. We like that and hug us more.

GHOST SHOE 2: Yes. Hug your shoes. It feels good because we love you. Farewell.

GHOST SHOE 1: Farewell.

MOLLY BLOOM: OK. That was weird. Let's just end there before things get even weirder.

KRISHA: Theme music?

MOLLY BLOOM: Please.

[THEME MUSIC]

KRISHA: Most of our trash goes into the landfill. It's packed together and covered in dirt.

MOLLY BLOOM: Landfills are the least sustainable option, but there are ways we can transform our waste for the better.

KRISHA: The best thing we can do is make less waste in the first place.

MOLLY BLOOM: We all make trash, but working together, we can move forward towards a more sustainable future. That's it for this episode of *Brains On.*

KRISHA: *Brains On* is produced by Sanden Totten, Menaka Wilhelm, Ruby Guthrie, Marc Sanchez, and Molly Bloom.

MOLLY BLOOM: We had engineering help from Eric Romani. Our production intern is Catherine Sundquist. Dan Latu is our digital intern. Special thanks to Jacqueline Omana, Kunsang Dorjee, Eric Wrangham, Vicky Kreckler, Stuart Bloom, Angie Timmons, and Nat [INAUDIBLE].

KRISHA: Before we go, it's time for the moment of UM.

GROUP: Um, um, um, um um, um, um, um.

EMERSON: If ant's like sugar and sweet things, why don't they attack beehives?

[UPBEAT MUSIC]

ELINA NINO: Well, actually, ants definitely do find and attack beehives. Hi. My name is Dr. Elina Niño, and I am a bee researcher and educator at UC Davis.

[UPBEAT MUSIC]

They usually go after the brood, which is the developing honey bees inside the colony. They will go inside, take away the eggs, so you can often see them carrying the eggs out of the colony. And they can actually devastate the colony.

So they can kill the colony by essentially stealing the brood from them. Usually, with the ants, for some reason, they're not quite as capable of getting rid of ants themselves as effectively. And I'm assuming it probably has a lot to do with the size and sheer number of the ants that can come in.

[UPBEAT MUSIC]

So we can definitely help bees prepare for ant attacks, and this is what we often do by putting, usually, soapy water at the bottom of the hive. Hives are usually on stands, so, for example, cinderblocks or little legs essentially that they can sit on. So we can put some soapy water in, for example, a tuna can.

And we can put the feet of those hive stands in there, and that usually will help with and prevent ants from going inside the colony. Of course, you have to make sure that they keep clean so the ants can crawl over the dust and debris. So there are definitely a few ways that we can help

KRISHA: Um, um, um.

MOLLY BLOOM: This list of people is pretty sweet. It's the *Brain's,* Honor Roll. These are the listeners that send in questions, drawings, mystery sounds, and high-fives.

[FUNKY MUSIC]

[LISTING HONOR ROLL]

We'll be back next week with a new episode.

KRISHA: Thanks for listening.