Transcript

Speaker 1

This is Show Me Today. I'm Bill Pollock with thousands of visitors expected in Kansas City for the FIFA World Cup. Public health teams across the region are preparing for everything from severe weather to emerging health concerns. One tool helping them stay ahead is wastewater monitoring. By analyzing community wastewater, health experts can identify trends and detect potential health signals early. Often before they appear in the health care system. The information helps hospitals, emergency planners, and local leaders make informed decisions as they prepare for this big event in the region. I recently took a tour of the Grand Glaze Wastewater Treatment Plant and we put together a video. You'll hear some music in the background, but we kind of walked through the steps and the people who are involved in this operation. We're at the Grand Glaze Wastewater Treatment Plant in Valley Park, just outside of St. Louis. Today we'll visit with Kim Duke and Chris Pfeiffer to find out how this process works, how they collect samples, and how the work that they're doing is helping your community be safer. Hey, Chris, how are you? Hey, I'm good. to see you. Thank you for having us. Absolutely. All right, so you're the plant manager here at Grand Glaze. I am one of seven.

Speaker 2

One of seven treatment plants. I actually oversee the operations here, our Fenton treatment plant and our Lower Merrimack plant.

Speaker 1

What are you going to show us today?

Speaker 2

You're going to see a little bit of everything. We're going to walk the process on the water side, start to finish, and then you're going to see the solids.

Speaker 1

As we begin our tour, Chris explained that water comes to the Grand Glaze plant through a collection system. That's the sewers and pipes in the ground. MSD has about 6,500 sanitary lines flowing to them every day. Their total pipe inventory is about 10,000 miles of tubing. When people are sick, they can shed pieces of virus in their waste. All waste from a community moves through the collection system to the wastewater facility, where it will be

sampled and tested to learn more about virus circulating in the community. First, Chris is going to show me around the wastewater treatment facility and introduce me to the steps in the wastewater cleaning process. So what are we looking at then? Whoa, that is a long way.

Speaker 2

We're looking at about 40 feet. So that's where the water comes in. The next step is our influent pumping, where we raise the level of the water and let it fall through the plant. You can see the operation of our Boscar unit. It goes all the way down, it'll raise, heads over to the dumpster and the claw opens. Yeah.

Speaker 1

I better tighten my hard hat. I could just see this falling and you'll be scooping this up next. The water then encounters the fine screens. Chris details how the fine screens work.

Speaker 2

So the water is pumped from down low up high. This is the highest water spot in the plant. There's channels underneath us. They flow through these fine screens. You can see the debris they're catching and pulling out.

Speaker 1

Yeah.

Speaker 2

So that's a moving screen. It's got a brush, kind of like a car wash on the backside. It cleans all the debris off the screen, and it's slurry down. We put it into dumpsters. Dewater it and put it into dumpsters.

Speaker 1

And the process continues outside.

Speaker 2

So after the fine screens, the water comes through channels into these tanks. Again, very quick process. Lets any remaining solids, grit, rock, stuff like that, fall out. The water keeps on going. The water and the organics keep on going.

Speaker 1

And by organics, you mean?

Speaker 2

Poop. It's the biosolids.

Speaker 1

Ask a simple question, get a simple answer. After the grit handling system, we moved on to a quartet of large round pools for primary treatment.

Speaker 2

So the water comes up through the center, that area inside that ring, the ring knocks out any eddies or currents, and that's where we slow things down. The solids sink to the bottom, any floatables come to the top. You can see the arm at the top, it wraps itself around, so that's centripetal force. puts everything to the outside over time. And this brush system, it cleans the weir so we don't have any algae. And it captures those solids into a scum pit. After the water's gone through primary treatment, it spills over the weir to the outer ring, where it's collected at the far side. Ultimately ends up in our aeration tanks, which you can see in the distance there. That'll be our next stop.

Speaker 1

And we've made our way over to the aeration tanks.

Speaker 2

So these are aeration tanks. After primary treatment, it comes to aeration. That's where the biological side really kicks in. We have mixed liquor, which is those microorganisms in the water. You can see the color is a little bit different. It's more of a brown chocolate milk look, as opposed to the green in the primaries. That's that biology happening. At the bottom of these tanks, we have hundreds of these small pods that bubble air up. That's that foam pattern you're seeing on the top. Disinfection is the last part of our process.

Speaker 1

All right, let's see that.

Speaker 2

All right.

Speaker 1

After the secondary settling step, microorganisms are recycled from the water and sent back to the aeration tanks. This process is accomplished by using a hydraulic machine

called an Archimedes screw pump. In non-Greek terms, it separates the water from the sludge. Finally, the water is disinfected. Chris explains what goes into that process.

Speaker 2

Sodium hypochloride. Bleach, but it's a lot more powerful than what you have at home. So you might smell a bit of a pool smell here.

Speaker 1

Yeah.

Speaker 2

So that mixes with the water. From there, we need contact time. The water flows out of this to our chlorine contact basins, where we let that chlorine do what it needs to do. After we introduce the chlorine at that previous structure, it comes over here, and you can see it kind of worms back and forth. That allows for contact time for that chlorine to interact with the wastewater. Any remaining impurities are neutralized. We have meters to determine if there's any residual fluorine in the water. We introduce enough bisulfite to neutralize that. From here, it spills under the weirs into a channel that we're standing over and ultimately heads out to the river.

Speaker 1

Now that we know what Grand Glaze Treatment Plant does, I wanted to know more about how they're helping the Missouri Department of Health and Senior Services with their wastewater surveillance program. For that, I spoke to Kim Duke. How did MSD get involved with the Missouri Wastewater Surveillance Program?

Speaker 3

So the state approached MSD about monitoring the wastewater. And we We're happy to partner with them. Part of the mission of MSD is to protect public health. Partnering with us is sharing that information and allowing us to know like heads up because there will be a public impact on those results that the state sees. We pull samples like this, like the sample container. We get these daily, multiples of these daily from each of the treatment plants. And we will pour off some of the sample twice a week to send it to the Mizzou lab, and they actually do the testing at the Mizzou lab for those viruses.

Speaker 1

The water inside Kim's sample container is collected at the start of the wastewater cleaning process in a machine similar to the one you see here. Though typically the water

is much dirtier at the start of the process, machines like this one sample the water every five minutes over a 24-hour period before the wastewater has been treated. Back in her lab, I asked Kim what specifically the state is asking her to investigate at Grand Glaze.

Speaker 3

Right now, the state is asking us to monitor three specific viruses, COVID, the flu virus A&B, and RSV. Those are specifically targeted because those affect our vulnerable populations significantly more than it would a healthy individual. RSV is a pretty significant pediatric virus. And we want to know and see if there's peaks in that so that we can prepare the community at large to say this is going around, do the appropriate things to keep your family and community well.

Speaker 1

What is your hope moving forward as this program continues and the work that MSD is doing with them?

Speaker 3

Sure, so we are hoping to continue our partnership with the state. We ultimately all have the same goal that we want to improve health outcomes for our community. So if we can provide some, simple wastewater that they can do testing on, we want to continue that partnership.

Speaker 1

And before I left for the day, I had one more question I wanted to ask Chris. So of all the water and sludge that comes through, are there any odd things that slip through the cracks, rings or personal items?

Speaker 2

Absolutely. We found everything from class rings that we've been able to return to their owners, a whole bunch of watches. You see balls and toys that get kicked down inlets.

Speaker 1

I don't know if I'd want my class ring back if it made it all the way to you.

Speaker 2

Well, depends how hard school was for you.

Speaker 1

Yeah. Well, hey, again, thanks for meeting with us. Absolutely. It was great meeting you. Yeah, this is like a field trip. I felt like I was back in school. I think I earned my class ring. You did. Yeah, you taught me a lot. Yeah, I appreciate it. Wastewater surveillance offers an early warning system that can guide responses to viral outbreaks, track trends over time, and even explore new public health. health questions. For more information on the program and the ongoing efforts across the state, you can visit health.mo.gov/wastewater. The science happening behind the scenes in facilities like this one shows how innovative approaches can make a real difference in public health every day. I'm Bill Pollock from Show Me Today. Thanks for joining us.