mystery science

Grades K-5
Mini-Lesson: “How is ice cream made?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Jay! Ah, ice cream. It's the best. Growing up in Wisconsin, I loved to go out and get a scoop of ice cream that looked a lot like this one: cookies and cream and a cake cone. And here's another frozen treat that I used to love as a kid: paletas. I still eat paletas all the time. Maybe you've had one. They're usually made with fruit, sugar, and cream, and frozen into a bar. And they're delicious on a hot day. Someone named Ricardo has a question about ice cream. Let's give Ricardo a call now.

[Video Call]

- Hi, Jay!

- Hi, Ricardo!

- I have a question for you. How is ice cream made?

- That's a great question.

I'm always wondering how stuff is made, and ice cream is no exception. One way we can figure out the answer is to visit an ice cream factory and see for ourselves. A lot of the ice cream we eat today is made in factories like this one in Vermont. Here you can see a person adding a liquid mix of cream, milk, and sugar into this big machine. This mix tastes like melted ice cream, except it hasn't been frozen yet. And check this out: see that paddle? It kind of looks like a big

version of a mixer you might use at home. Watch how it's stirring the mix. The stirring adds air into the ice cream as it freezes. Air is important in ice cream making because it helps make the ice cream soft. Oh, and here you can see the workers adding flavoring and other things, too, like chocolate chips or cookies. Once the ice cream is ready, it goes into these containers. This factory makes about 270 pints of ice cream per minute—about a million pints of ice cream a day! To make this much ice cream, these machines have to run all day every day, which just wouldn't be possible without electricity. But what if I told you that people have been making ice cream for a long time, even before electricity? It's true, but how do we know this? This is a painting from the early 1800's. Check out what that man's eating. Ice cream! And here's another painting from around the same time. It shows a man selling ice cream. Now these were painted long before electricity was used. So how do you think people made ice cream back then?

VIDEO 2

This is such an interesting question. Let's think about it together. Remember the ice cream factory we saw? There was a big machine that stirred and froze the ice cream mix. So to make ice cream, you have to do two things: stir and freeze. Okay, so that first part, stirring. No problem. People can stir ice cream mix without electricity. Sure, your arm might get tired, but you could definitely do it. But then there's freezing—how did people freeze things without electricity? Well, they used ice. One of the ways people got ice back then was to cut it from frozen lakes and rivers during the winter. And to keep the ice frozen, they had to store it in one of these. This little building is called an icehouse. If you looked inside, you would see piles of ice covered with a thick layer of straw, which helped it stay frozen all year without electricity. People used this kind of ice to make an early version of ice cream. They would fill something like a jar

with different tasty ingredients, maybe milk and sugar, maybe juice and sugar. Then they would put this jar into a container filled with ice and salt. After a while, the yummy mixture inside the jars would freeze, turning into slushies or ice cream. Around the world, people found creative ways of using ice to make different kinds of frozen treats. Like in Italy, where this invention let people mix juice and sugar in a barrel full of ice and salt until it became a smooth and colorful treat called sorbet. Or in India, where metal molds filled with milk, sugar, spices, and nuts created a delicious frozen bar called kulfi. These cold treats took a lot of time and work to make. But by the middle of the 1800s, people found new ways to make a lot of ice cream, so that a lot of people could enjoy it. For example, in Pennsylvania, a milkman named Jacob Fussell built the world's first ice cream factory. Now remember, this was before electricity was available, so when Fussell built his factory, he made sure to also build an icehouse, and he put it right next to a source of ice, a creek that froze every winter. Fussell didn't just use his ice to make ice cream; he also used it to ship ice cream. Packing train cars with ice and straw, his containers of vanilla, chocolate, and strawberry traveled to cities across America without melting, even during the summer. Fussell's ice cream company was a huge success. He built many more factories in other states, and his ice cream remained popular even after electricity was widely used. So in summary, most ice cream today is made in factories with big machines and freezers. But before electricity, ice cream was made by hand using ice. There are actually a lot of ways to make ice cream. All you need to do is stir the ingredients as they freeze. People make ice cream in lots of places besides big factories. Like in small factories that make one batch at a time, and even at home with ice cream makers like this one, where you can turn a crank that spins the ice cream and sugar mixture as it freezes. And you can even make ice cream in a plastic bag. There are lots of recipes online for this, but here are the basics. Take two plastic bags, fill one with ice and salt, and the other with your ice cream ingredients. Put the ice cream bag inside of the ice and

salt bag. Make sure to close them both securely, and shake. In about 10 minutes, you should have ice cream. And if you make cookies and cream, save some for me. That's all for this week's question. Thanks, Ricardo, for asking it!