

## Science Time

### Program Content for March 29, 2017

Read the article 'Another risk factor for orcas: sewage seepage' on page B1 of the Saturday, March 25, 2017 edition of The Seattle Times.

#### Objective

- I can explain how human actions impact the health of orcas.
- I can explain how the West Point treatment plant has improved in recent weeks.

#### Next Generation Science Standards (NGSS) connection

##### **Disciplinary Core Idea** - Human Impacts on Earth Systems

- Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things.

#### Pre-reading and Vocabulary: Define each term and then use it in a sentence to demonstrate your understanding.

1. pathogens
2. microbiome
3. antibiotic resistance
4. marine
5. effluent

#### Comprehension Questions

1. What factors are stressing orcas?
2. What risk factor was recently identified as a fourth stressor?
3. How many Southern Resident Killer Whales (orcas) are there?
4. How did scientists collect data for the recently published paper in Nature?
5. What percent of a whales lung capacity is exchanged when they breathe?
6. What were scientists looking for when they collected data for this study?
7. What is one possible source of the pathogens discovered in orca breath?
8. How many gallons per day of untreated wastewater were being released from the West Point treatment plant until last week?
9. Why was untreated wastewater being released by the West Point plant?
10. Full operation of the West Point plant is dependent upon what living thing?
11. What improvements have been made to the West Point plant since last week?

#### Prompts and Extensions

1. Take a look at the recently [published article](#) about orcas and the scientists who collected their breath.
2. Find out more about the damaged [West Point wastewater treatment plant](#) and the [role that microorganisms play](#) in the treatment of sewage.
3. Learn more about the endangered Southern Resident Killer Whales at the Center for Whale Research's [website](#) and in a recent [blog post](#) by the SeaDoc society.
4. Take a [virtual tour](#) of the West Point wastewater treatment plant to learn more about how it works.

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