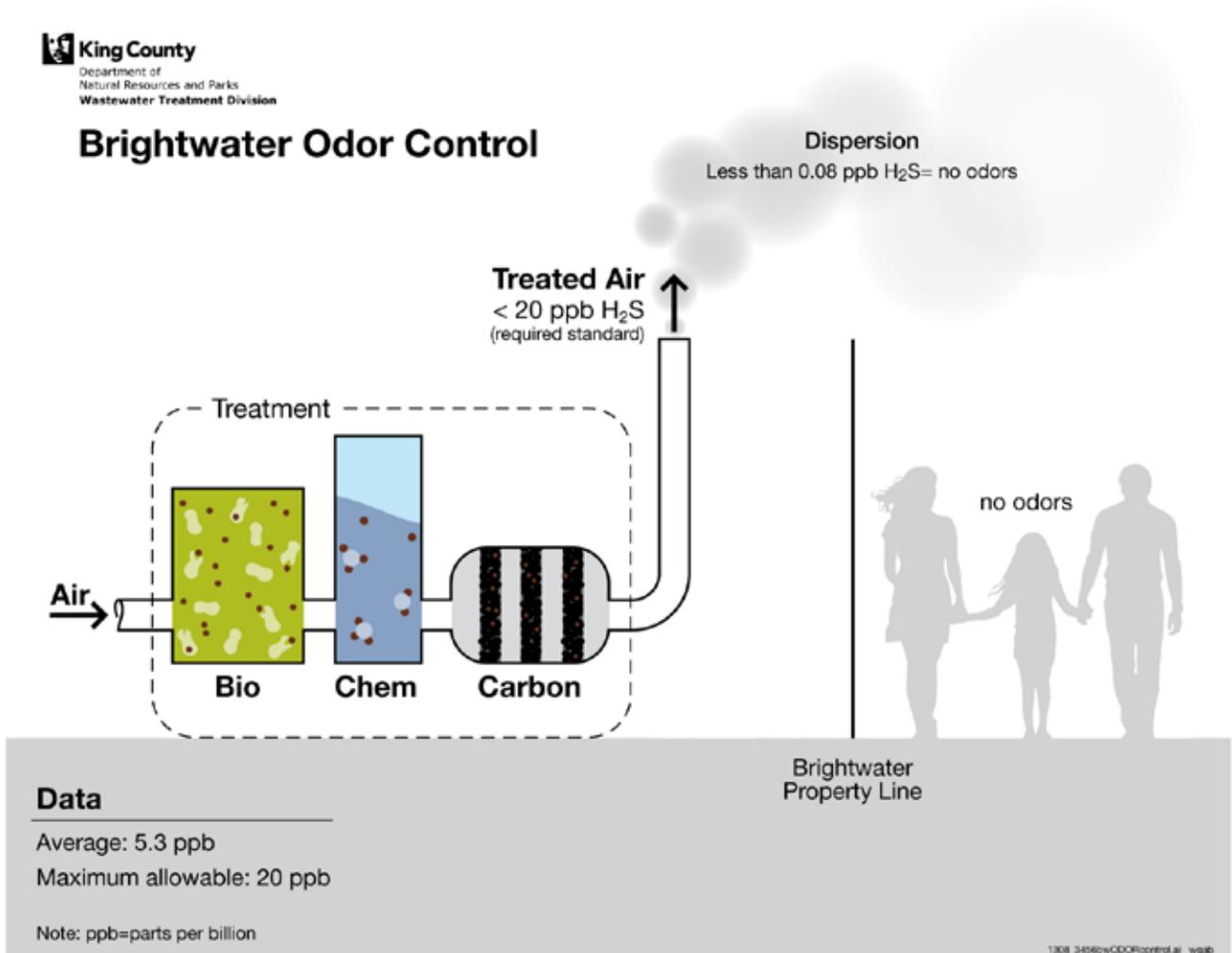


Brightwater Odor Control

Meeting Community Expectations and Permit Requirements

Achieving Brightwater's air quality standards remains a top priority for King County's Wastewater Treatment Division. Since September 2011, when the treatment plant began operation, it has operated continuously without generating odors. Odor monitoring has confirmed that the plant is achieving the "no odor" standards agreed to in our permits.

Brightwater is establishing itself as a good neighbor, and air quality standards go beyond the public's ability to detect nuisance odors. King County measures Brightwater's air quality performance using equipment put in place to detect emissions of ammonia and hydrogen sulfide, or H₂S, which produces the unpleasant "rotten egg" smell typically associated with sewage.





Brightwater Air Quality – A Summary

Under the standards established in a permit agreement with Snohomish County, King County measures concentrations of ammonia and hydrogen sulfide in parts per billion, or ppb.

- The permit agreement requires “no detectable odors” at the property boundaries and beyond. The phrase “no detectable odors” is defined in the agreement as no more than 0.8 ppb hydrogen sulfide and 2800 ppb ammonia may be detected from emissions from the treatment plant at the Brightwater facility property boundaries or beyond.
- An Odor Control Monitoring and Response Plan was adopted in 2005 as part of the Snohomish County approved binding site plan for the Brightwater facility. The Plan was updated in 2012 to provide greater detail on odor monitoring and response procedures. This document is provided as a supplement to the Plan.
- Concentrations of 0.8 ppb H₂S and 2,800 ppb ammonia are below the lowest levels detectable to the most sensitive human nose.
- For H₂S, 0.8ppb at the property boundary was used to derive the 20 ppb compliance level at the stack. The stacks are the air permit compliance point, and the 20ppb compliance level was based on very conservative meteorological conditions utilizing a 25 to 1 dispersion ratio and the 0.8ppb detection threshold (25 X 0.8 ppb H₂S, results in 20 ppb H₂S for compliance at the stack). The maximum stack emission of 20 ppb ensures lower than 0.8 ppb of H₂S at the property boundary.
- King County measures the emission stacks for compliance and also measures air quality at the fence line as a precaution per Section 4 of the Odor Monitoring and Response Plan. Measurements at the property boundary detect all odors including those that aren’t plant-related.

Monitoring for Odor

Action Thresholds for Investigation of Hydrogen Sulfide and Ammonia

Treated air from the odor control system is subjected to the maximum emission limit of 20 ppb H₂S and 70,000 ppb ammonia at the point of compliance established at the emission stacks.

Location	H₂S concentration	Ammonia concentration
Odor scrubber facilities, stack outlet	< 20ppb	< 70,000 ppb

As a precautionary measure, and to establish a local baseline for surrounding odor sources, King County takes odor measurements at the property boundary. King County uses a portable Jerome Analyzer for this purpose as it is considered to be the best instrumentation for this application. The Jerome Analyzer is a very sensitive instrument; however, it cannot accurately read hydrogen sulfide below 3 ppb.

When the emission stacks are in compliance (under 20 ppb H₂S), property boundary monitoring often detect H₂S levels above 3ppb. These readings are due to local sources and not attributable to



Brightwater Odor Control

treatment plant stack emissions. In fact, prior to Brightwater treating sewage, property boundary monitoring frequently detected background levels up to 7ppb H₂S. H₂S levels are present due to other sources such as automobile exhaust along Route 9, natural biological processes in local wetlands, and compost/landscaping materials.

Point of Compliance

When it comes to air quality, the emission stacks are the designated “point of compliance”, and their measurements are the most reliable indicator of H₂S emission levels at the treatment plant. By continually monitoring stack air for H₂S, we can immediately take action if concentrations exceed thresholds for investigation.

Nonetheless, the Odor Monitoring and Response Plan require that property boundary readings at or above the H₂S detection limit merit an action response. This includes:

- 1) Immediate analysis of stack monitor data to determine if any of the monitors have recorded H₂S of 20ppb or above.
- 2) If stack monitoring data has recorded H₂S of 20ppb or above, immediate investigation of the source and cause.
- 3) Confirm that plant processes are operating in accordance with O&M requirements.
- 4) Initiate corrective action within 24 hours.

Measurements at the property boundary are useful to track the presence of other sources of H₂S and are required in the event of an elevated stack measurement. Property boundary measurements are not alone indicative of the presence of plant-related air quality issues.

Keeping Our Promise

Brightwater is now operating successfully and meeting the most stringent odor control standards in the U.S. King County is committed to keeping its promise that the plant will be a good neighbor and an asset to the community.

People can report odor concerns 24/7 by calling 206-263-9500.

Additional information about Brightwater is available at
<http://www.kingcounty.gov/environment/wtd/About/System/Brightwater.aspx>