



FREQUENTLY ASKED QUESTIONS

Odor Issues at the Annapolis Water Reclamation Facility

What is the likely source of odors in my neighborhood?

The Annapolis Water Reclamation Facility (WRF) is a wastewater treatment plant jointly owned by the City of Annapolis and Anne Arundel County (County). This plant receives and treats wastewater from the City and County. The County is undergoing a series of upgrades to the WRF. As part of these upgrades, the County is evaluating the existing odor control system in response to odors reported in the neighborhood surrounding the WRF. These odors are primarily due to the natural production of hydrogen sulfide, a gas that is generated from wastewater and is typically associated with the “rotten egg” smell noted by area residents and workers.

What is hydrogen sulfide?

Hydrogen sulfide is a colorless, flammable gas that is produced naturally when bacteria break down organic matter. It has an unpleasant smell similar to rotten eggs. After it is produced, hydrogen sulfide is released to the air. Hydrogen sulfide can be from natural sources, such as the mud in tidal flats, and man-made sources, such as factories. At wastewater treatment facilities, hydrogen sulfide gas is produced by bacteria in the wastewater. Typical background levels of hydrogen sulfide in outdoor air (due to natural sources) range from around 0.11 parts per billion by volume (ppbv) to 0.33 ppbv (ATSDR 2016).

What is a Part Per Billion?

Imagine you have a giant jar filled with 1 billion tiny marbles. If you remove just 1 marble and paint it red, that red marble represents 1 part per billion (ppb) of the marbles in the jar. If a certain chemical is present in air at a level of 1 ppbv, then for every billion molecules of air, just one molecule is that chemical.

What testing has been done?

Between March and August, 2024, the County initiated an air monitoring program to evaluate the levels of hydrogen sulfide in the air at multiple locations at the WRF and within the surrounding neighborhood. This monitoring program consisted of the deployment of hydrogen sulfide air monitoring devices at the WRF, at the fence line of the WRF, and at seven neighborhood locations adjacent to the WRF. Monitoring results showed that hydrogen sulfide was detected most frequently and at the highest concentrations at the WRF and fence line locations. In neighborhood locations, hydrogen sulfide was detected infrequently and at levels much lower than at the WRF. On average, levels in the neighborhood were within the range of or slightly above typical background levels (0.11-0.33 ppbv), although the occasional detections of hydrogen sulfide exceeded background levels.

I can smell the hydrogen sulfide. Will the odors make me sick?

Most people can smell hydrogen sulfide in the air at very low levels ranging from 0.5 ppbv to 300 ppbv (ATSDR 2016). Odor, however, is not a reliable means of predicting health effects. The health effects from exposure to hydrogen sulfide depend on the amount to which a person is exposed and the duration over which they are exposed. Exposure to low levels of hydrogen sulfide (less than or equal to 50,000 ppbv) may cause eye, nose, and throat irritation, may worsen asthma, or cause headaches and nausea. Exposure to very high levels (greater than 100,000 ppbv) can result in loss of consciousness, impacts to vital systems (for example, cardiovascular, neurological), and even death. Hydrogen sulfide has not been shown to cause cancer in humans.

The County hired a toxicologist to conduct a health risk assessment. This risk assessment evaluates whether the levels of hydrogen sulfide in the air are likely to cause health effects to those that breathe the air. **The risk assessment concluded that the very low levels of hydrogen sulfide detected in the neighborhood are not expected to cause health effects for those who are routinely exposed.**

What is the WRF doing to eliminate the odors?

The County acknowledges the close proximity of the existing plant to its surrounding neighbors. Over the past year, the County has conducted a comprehensive odor evaluation that included air monitoring and data analysis to identify the main sources of hydrogen sulfide and the means to best control them. The County initiated a capital improvement project to design and construct new/replacement odor control devices for the WRF in 2025. Some of those upgrades began this Spring of 2025, and the remainder of the upgrades are expected to be completed by early 2028.

Who can I contact for information or to register an odor complaint?

Anne Arundel County has a website for the WRF that contains a wealth of information about the odor control project, including this Frequently Asked Questions, previous presentations, reports, and monitoring data:

<https://www.aacounty.org/public-works/utilities/sewerwastewater-system/annapolis-water-reclamation-facility>

If you have general questions about the odor control project or odor complaints, please contact:

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Annapolis WRF Update webpage:
<http://aacounty.org/annapolisWRFodor>