

HRSD's Pretreatment Program



The Pretreatment Program regulates hundreds of industries within HRSD's service area.

HRSD sends approximately 155 million gallons of highly treated water into Hampton Roads waterways daily. Before entering the environment, this water travels through multiple levels of treatment at HRSD's wastewater treatment plants to ensure it is protective of aquatic life and public health. With SWIFT, that highly treated water will undergo additional treatment procedures in the Advanced Water Treatment Process to treat it even further in order to meet stringent drinking water standards. HRSD relies on a rigorous **Pretreatment Program** to safeguard these treatment processes and maintain its ability to produce the highest quality of water possible. HRSD's Pretreatment Program reduces the amount of harmful pollutants entering its facilities by managing hundreds of sources of industrial waste throughout Hampton Roads.

How does HRSD manage sources of pollution?

Industrial waste is used water from manufacturing or chemical processes. This water is more likely to contain higher amounts and more types of harmful chemicals than the wastewater that comes from homes and is therefore extensively regulated by HRSD's **Pretreatment and Pollution**

Prevention (P3) Division. P3 staff inspects hundreds of industries and commercial and service facilities throughout Hampton Roads to ensure they are complying with HRSD's rigorous **Industrial Wastewater Discharge Regulations**. These include hospitals, manufacturing and chemical production facilities, food processing plants, municipal solid waste landfills, and many other types of businesses and industries. Of these, 175 have been issued strict permits and hundreds more are regularly monitored to ensure they are not discharging harmful chemicals or heavy metals to HRSD's wastewater treatment plants.

What kind of pollution does HRSD's Pretreatment Program regulate?

While scientists expect to find measurable levels of pollution in the water that enters a wastewater treatment plant, high concentrations of contamination can harm the biological organisms involved in the treatment process and prevent them from operating effectively.

Wastewater treatment plants were traditionally designed to effectively treat **Compatible Pollutants**- or those pollutants commonly present

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in wastewater, such as nutrients and bacteria. These pollutants do not normally interfere with the wastewater treatment process or pass through the plant untreated. However, wastewater treatment plants were NOT traditionally designed to effectively treat **Incompatible Pollutants**- or those pollutants not commonly present in wastewater, such as heavy metals and chemicals. HRSD's most effective step in maintaining its record of high-level treatment is to control these pollutants at their sources. This involves prohibiting industries from adding more incompatible pollutants to the HRSD collection system than the treatment process can remove, or even banning them entirely.

Some pollutants are known or suspected to build up in the environment over time and cause significant harm. Because of this, industries are strictly prohibited from sending these types of pollutants to HRSD's wastewater treatment plants. These **Zero Discharge Pollutants** include many chemicals that were once widely used in commercial industries but have since been outlawed, such as PCBs (polychlorinated biphenyls) and TBT (tributyltin).

What happens if highly polluted water enters HRSD's system?

HRSD's 13 wastewater treatment plants consistently produce water that surpasses strict **Virginia Pollutant Discharge Elimination System** (VPDES) requirements. Maintaining this high level of treatment involves a combination of state-of-the-art technology, innovative pollution removal

processes and continuous monitoring of the water entering and leaving HRSD facilities. While HRSD's Pretreatment Program is extremely effective at preventing significant levels of incompatible pollutants from entering its system, additional safeguards are in place to ensure the final highly treated water is always protective of public and environmental health.

Within the HRSD collection system, staff uses system reports from pump stations- which include observations of abnormal wastewater appearance and odor-as indicators of harmful pollution. Staff can use this method to isolate and dispose of harmful pollution before it reaches a wastewater treatment plant. Once at a wastewater treatment plant, water quality and process performance are analyzed at multiple points throughout the treatment process to confirm that the cleaning process is effective and unsafe levels of pollutants are not passing through untreated.

What about the pollutants we don't know about?

The effect of newer or rarer chemicals on the wastewater treatment process may not be known by the scientific community. To address this, HRSD staff conducts **Treatability Studies** to test how they react with traditional wastewater and influence the efficiency and effectiveness of HRSD's facilities. This enables HRSD to make educated decisions about the types and concentrations of chemicals it allows to enter its treatment plants.

The highly treated water that is reintroduced into the environment from HRSD's 13 wastewater treatment plants is protective of the water bodies into which it's entering; however, it is not yet ready to drink. To achieve drinking water quality, it will pass through further barriers in SWIFT's Advanced Water Treatment Process before entering the Potomac aquifer to remove any remaining nutrients, chemicals or other pollutants that may be harmful to human health.

HRSD monitors hospitals, manufacturing and chemical production facilities, food processing plants, municipal solid waste landfills and many other types of industries and businesses throughout Hampton Roads.

HRSD's rigorous Industrial Wastewater Discharge Regulations safeguard its 13 Wastewater Treatment Plants, the SWIFT Advanced Water Treatment Process, and- ultimately- the health of Hampton Roads residents and waterways.