



## Ammonia Removal at the Refinery on St. Croix Completed

Work is progressing to remove certain dangerous chemicals from the refinery on St. Croix. This includes work to remove ammonia, amines and liquified natural gas (LPG).

The ammonia removal is completed, and the two containers of liquid ammonia were shipped off the island on June 22. The rinse water used to clean equipment during the removal process contains low levels of ammonia will remain at the refinery until EPA determines how it will be addressed. EPA will stop monitoring for ammonia on June 29. EPA will continue to conduct monitoring for chemicals that are still being removed and will phase out monitoring when that work is completed.

### How much ammonia was removed?

Under the Environmental Protection Agency (EPA) oversight, specialized contractors transferred 8,400 gallons of liquid industrial grade ammonia into two shipping containers. The shipping containers were shipped off island on **June 22**. The shipment off island of the liquid ammonia marks significant progress in reducing the threat of a chemical release from the Port Hamilton Refinery.

### Will all of the ammonia be removed from the facility?

Several containers of rinse water containing ammonia were generated as part of the ammonia removal process. These containers are not currently scheduled to be shipped off island. EPA assessed the threat of an ammonia air release from this source and has determined that the potential for people's exposure is well below the standards EPA has used for the fence line and community air monitors for the industrial grade ammonia.

### Will EPA continue air monitoring in the community?

EPA will continue to monitor for hydrogen sulfide, sulfur dioxide and nitrogen dioxide. These gases are associated with liquid petroleum gas (LPG) and amines that EPA is still currently removing from the facility. The real time air monitoring readings will also continue to be available on the website at <https://phrt-epa.hub.arcgis.com/>. EPA will suspend air monitoring once the liquid LPG and liquid amines have been removed from the facility and shipped off island.

### What is industrial grade or anhydrous ammonia?

Ammonia is a colorless gas with a very distinct odor. The odor of ammonia is familiar to many people because it is used in smelling salts, many household cleaners, and window-cleaning products.

Anhydrous or industrial grade ammonia contains very little water and is much stronger than the ammonia used in household products. It was used at the refinery as an additive in a system that produced gasoline.

### Is industrial grade ammonia dangerous?

Anhydrous ammonia is a dangerous industrial chemical. Symptoms related to the exposure of ammonia, in both liquid and gaseous states, include eye redness, throat and lung irritation, coughing, and a choking sensation.

### What other chemicals is EPA removing from the facility?

Along with the anhydrous ammonia, EPA is removing amines and liquid petroleum gas (LPG) from the facility.

### What are amines or rich amines?

An amine system uses a solution of specific chemicals, called alkylamines, to remove hydrogen sulfide and carbon dioxide from refinery gas streams. Removing hydrogen sulfide and carbon dioxide from the refinery gases improves safety, prevents corrosion, and meets environmental regulations. When hydrogen sulfide is present in the amine solution, it is considered a “rich” amine solution.

### What is liquefied petroleum gas (LPG)?

Liquefied petroleum gas, or LPG, is a fuel gas which contains a flammable mixture of hydrocarbon gases. LPG is typically stored inside a pressure vessel to keep the gas in a liquid state. LPG generally has no odor unless a chemical is injected into the gas to cause it to smell. Odor-causing chemicals have **not** been added to the LPG stored at the facility, so no odors are associated with this material.

### How much of the amines and LPG are being removed?

Under EPA oversight, specialized contractors have removed approximately 321,836 gallons of rich amine liquid from facility equipment as of June 20. At this time, it is estimated that less than 10,000 gallons of amine liquid still need to be transferred out of the amine units and into shipping containers. Removal of this remaining amine liquid was completed on June 22. Amine vapors are being treated on site, and cleaning solution is being collected in specialized containers for disposal.

Removal of the liquid LPG from facility equipment took place through June 10, at which point the work was paused due to the need for additional shipping containers. The additional shipping containers are not scheduled to arrive at the facility until mid-July, when the off-loading of LPG from facility equipment will resume. Once that work resumes, it is estimated that it will take approximately two weeks to be completed. Two shipping containers, totaling approximately 10,000 gallons of LPG have been shipped off-site to date. While transferring the liquid LPG, vapors are routed to special equipment called a thermal oxidizer, which burns or destroys the vapors.

### Are rich amine solutions and LPG dangerous?

Amines typically have a fishy odor. Symptoms related to amine exposure include eye irritation and visual disturbances such as blurry vision. The amine solution at the facility contains hydrogen sulfide, a colorless gas with a very strong rotten egg odor. Low level exposure to concentrations of hydrogen sulfide can cause irritation to the eyes and respiratory system, dizziness, headaches, irritability, and nausea. Exposure to higher concentrations can result in tremors and convulsions.

LPG is a highly flammable gas that poses a fire hazard when improperly stored. Symptoms of exposure to LPG include headaches, drowsiness, and dizziness. Since LPG is heavier than the air, it will accumulate close to the ground.

Sulfur dioxide and nitrogen dioxide may be produced when using a thermal oxidizer to burn the LPG vapors. Sulfur dioxide is a nonflammable, colorless gas with a strong odor like burning rubber. Symptoms of exposure to sulfur dioxide may include difficulty breathing, changes in the ability to breathe deeply, and burning of the nose and throat. Nitrogen dioxide is nonflammable and colorless to brown-colored gas that has a strong, harsh odor. Low levels of nitrogen dioxide can irritate the eyes, nose, throat, and lungs, possibly causing coughing, shortness of breath, tiredness, and nausea.

For more information and answers to frequently asked health questions, visit the Agency for Toxic Substances and Disease Registry’s Toxic Substance Portal: <https://www.atsdr.cdc.gov/toxfaqs/tfacts126.pdf>

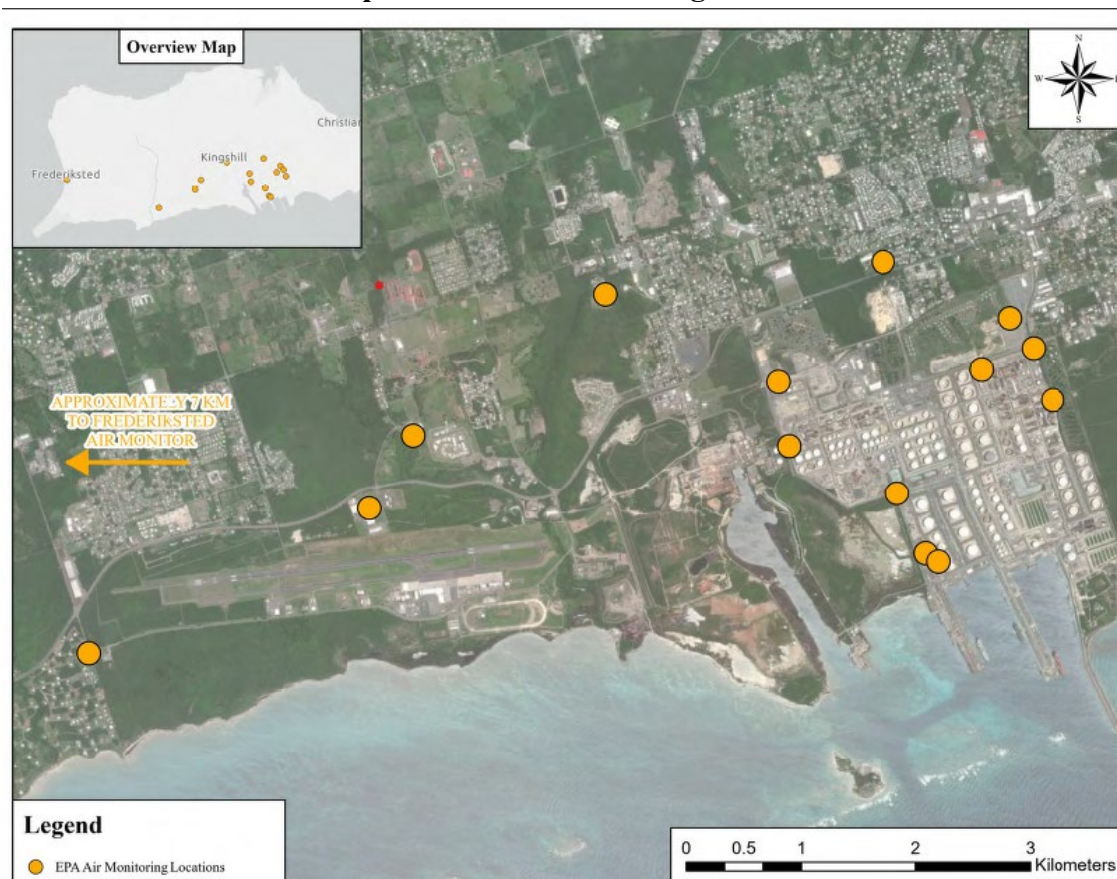
### What are the health risks if chemicals are released?

Exposure to ammonia, hydrogen sulfide, sulfur dioxide and nitrous oxides could cause irritation to the eyes, nose, throat and lungs, and respiratory system, or more serious harms.

### How will the public be protected?

In addition to EPA personnel overseeing the chemicals removal work, EPA will monitor the air around-the-clock. The locations of the air monitors are shown below. EPA is displaying the real-time air monitoring results on [EPA's refinery on St Croix website: https://phrt-epa.hub.arcgis.com/](https://phrt-epa.hub.arcgis.com/). EPA will continue to coordinate closely with the government of the U.S. Virgin Islands emergency management and environmental agencies. The Virgin Islands Territorial Emergency Management Agency (VITEMA) is the coordinating agency of the U.S. Virgin Islands for emergency readiness and response.

**Map of EPA Air Monitoring Locations**



### Staying Up To Date

To stay up to date during the chemicals removal work, residents can:

1. Monitor real-time air quality conditions available on EPA's public website for the PHRT facility at <https://phrt-epa.hub.arcgis.com/>.
2. Sign up for alerts from VITEMA's Alert VI System at <https://member.everbridge.net/892807736729008/new>.
3. Follow updates from local officials, including information provided at the weekly Governor's updates.
4. Monitor cell phone for notification broadcasts from local agencies, such as VITEMA.



For more information, please visit:

EPA St. Croix Refinery Website: [www.epa.gov/vi/refinery-st-croix-us-virgin-islands](http://www.epa.gov/vi/refinery-st-croix-us-virgin-islands)

EPA Community Air Monitoring Website: <https://phrt-epa.hub.arcgis.com/>

VITEMA Website: [www.vitema.vi.gov](http://www.vitema.vi.gov)



If you have any questions or concerns, please contact:

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