

## GenX Frequently Asked Questions

**Note: The following document provides frequently asked questions and answers concerning GenX and other emerging contaminants. Due to inputs from state and federal partners, information about GenX is continually evolving. Updates will be provided as new information becomes available.**

### **What is GenX?**

GenX is a trade name for a man-made and unregulated chemical used in manufacturing nonstick coatings and for other purposes. Chemours' facility in Fayetteville began producing GenX commercially in 2009 as a replacement for PFOA. The same chemical is also produced as a byproduct during other manufacturing processes and it may have been present in the environment for many years before being produced commercially as GenX.

### **What actions has the state taken to address GenX and other emerging contaminants?**

At Governor Roy Cooper's direction, DEQ and DHHS have deployed all available resources to address the immediate concerns in the Lower Cape Fear region.

The N.C. Department of Environmental Quality and the state Department of Health and Human Services launched an investigation June 14 into the presence of GenX in the Cape Fear River. The river serves as the primary source of drinking water for Bladen, Brunswick, New Hanover and Pender counties.

On June 19, DEQ and DHHS started collecting water samples from multiple sites in the Cape Fear River to test for concentrations of GenX. State officials continue to collect water samples, with samples being tested at an EPA lab in North Carolina and at multiple private labs. Here's a Map and dates of the sampling.

On June 27, DEQ conducted an on-site inspection to verify that Chemours is redirecting process wastewater with the GenX into temporary storage tanks for off-site shipment and incineration.

DEQ released the first state test results July 14. At the same time, DHHS released an updated preliminary health assessment for concentrations of GenX in drinking water. DHHS' updated health goal is conservative and health protective for non-cancer health effects in bottle-fed infants, pregnant women, lactating women, children and adults. The changes to the health goal reflect additional health studies. Detailed information regarding the initial and revised assessments are posted online at: <http://bit.ly/2uutE4z>

Since the state was successful at getting Chemours to stop the release of GenX into the Cape Fear River, we have seen a precipitous decline in the concentrations of the chemical compound at all sites. Tests continue to show that levels of GenX in finished drinking water are below the state's health goal.

State water quality officials plan to continue water sampling and analysis at the finished water sites for the foreseeable future. The first week of August, DEQ added 16 monitoring wells at the Chemours facility to the sampling plan to investigate groundwater conditions at the facility in Bladen County.

There are numerous other facets to our investigation.

Because of the lack of scientific data on the long-term public health effects of these contaminants, Governor Cooper has expanded the Secretaries' Science Advisory Board to help guide state officials on ways to better protect public health and the environment from new or unregulated chemicals.

Governor Cooper also has directed the State Bureau of Investigation to assess whether a criminal investigation is warranted. The SBI will work with its partners at DEQ and EPA to determine if there is evidence of criminal violations of the permit or any state or federal law or regulation.

DEQ and DHHS are working with the EPA and CDC to obtain more research that can be used to develop regulatory guidance for GenX and other emerging compounds. DEQ is continuing to monitor the facility to ensure releases have stopped. DEQ will deny Chemours' permit request to release GenX and a new permit will be developed. As part of its permit review, DEQ is investigating how and when Chemours disclosed in its wastewater discharge permit the chemicals it was discharging to the Cape Fear River. DEQ will take any appropriate enforcement actions related to its investigation.

During the investigation, DEQ and DHHS are exploring all regulatory options available. DEQ is reviewing the specific identifying information Chemours provided for the chemicals it was discharging into the Cape Fear River and will make public as soon as it is available any appropriate enforcement action.

Recognizing there are no national or state standards for GenX or the other chemicals identified in the 2016 report, DEQ and DHHS are seeking involvement by the EPA on the health effects of these emerging contaminants. This is a national issue and we're making the best use of state resources and working with our federal partners. While the state has the authority to enact regulatory standards, we do not have sufficient resources necessary to make these determinations for GenX or other unregulated compounds on a consistent basis.

All of the state's efforts have been well documented. The state has weekly conference calls to update local officials on the state's investigation and both DEQ and DHHS regularly publish any new information on this topic on our public web page devoted to GenX, <https://deq.nc.gov/news/hot-topics/genxinvestigation>.

#### **Where are water quality samples being collected?**

DEQ staff are collecting samples at multiple locations near Fayetteville, where the plant is located, and Wilmington. Sampling began the week of June 19 and has continued in the same locations for the past two months. DEQ staff in the Fayetteville Regional Office have been collecting water samples at the Chemours plant site, the Bladen Bluff intake and their treated water, a water supply well in Bladen County and the Hoffer Water Treatment Plant upstream of Chemours' facility. The Hoffer site was added the week of July 3.

DEQ staff in the Wilmington Regional Office have sampled at the intake site of the Lower Cape Fear Water and Sewer Authority's intake, the International Paper intake, the International Paper finished water, the Cape Fear Public Utility Authority's finished water, the Pender County public utility's finished water, the Brunswick County public utility's finished water, the Cape Fear Public Utility's Aquifer Storage and Recovery Well, and the Wrightsville Beach water supply well.

DEQ has added other locations downstream of the Chemours facility since the investigation began.

Water sampling and analysis will continue at finished drinking water sites for the foreseeable future.

Also, DEQ officials began the week of July 31 conducting groundwater sampling to look for any concentrations of GenX in 16 monitoring wells at the Chemours facility in Fayetteville. The groundwater results will help the state determine whether additional testing is warranted at private wells near the facility.

DEQ began testing residential drinking water wells near the Chemours facility because GenX was detected in 13 of 14 industrial monitoring wells from the onsite groundwater sampling conducted the week of July 31. At the same time, Chemours began testing drinking water wells located a mile from the facility.

### **Do I need to be concerned about my groundwater?**

DEQ has conducted testing of groundwater public water supply sources to look for the presence of GenX.

Those water supply wells are in Wrightsville Beach, the Cape Fear Public Utility's Aquifer Storage and Recovery Well and Bladen County. Concentrations at all the wells are below the state's public health goal for GenX.

DEQ is also sampling groundwater wells at the Chemours facility to determine if additional testing in the surrounding area is warranted. DEQ officials began the week of July 31 conducting sampling of 14 groundwater wells that are at the Chemours facility and not used for public purposes. The results of these tests will help the state determine whether additional testing is warranted at private drinking water wells near the facility.

Thirteen of 14 industrial wells at the company's Fayetteville Works facility had detections of GenX in violation of state groundwater standards. The wells tested are used for environmental monitoring at the facility and are not a source of drinking water.

Based on those test results, DEQ and DHHS notified local officials and initiated plans to start testing the private wells of residents nearest the facility Sept. 15.

Preliminary results continue to come in, but when GenX is detected above the state's provisional health goal, DEQ has directed Chemours to provide those well owners with bottled water.

### **DEQ prompted Chemours to stop discharging GenX into the Cape Fear River. Can the state take additional actions against Chemours or close the facility?**

The state is investigating to determine if Chemours violated the terms of its permits and the Clean Water Act and will take any appropriate enforcement actions as necessary. In addition, Governor Cooper has directed the State Bureau of Investigation's Diversion and Environmental Crimes Unit to assess whether a criminal investigation is warranted. The SBI will work with its partners at the N.C. Department of Environmental Quality and the EPA to determine if there is evidence of criminal violations of the permit or the federal consent order in place.

Other actions: September 5, 2017 Notice of Intent to Suspend  
September 7, 2017 Filing of complaint by DEQ in Bladen County Superior Court  
September 8, 2017 Entry of partial consent order

### **Is GenX regulated under the wastewater permit issued to Chemours?**

Currently, there are no state or federal criteria necessary to establish regulation of the wastewater discharge of GenX.

### **Will the state regulate GenX in Chemours' next wastewater permit?**

Chemours has applied for a new National Pollutant Discharge Elimination System permit (its wastewater discharge permit), a federal permit program that controls water pollution and is managed by DEQ. On July 24, Governor Cooper announced that DEQ will deny Chemours' request to release GenX and include that language in the next permit. Acknowledging the potential for other possibly harmful compounds, Chemours' draft permit will include a clause authorizing the state to quickly reopen the permit if needed to regulate and enforce levels of any emerging compounds based on new scientific findings.

**Why are officials waiting three days between sampling in Fayetteville and Wilmington?**

It takes an estimated three days for water to flow the 70 miles down the Cape Fear River from the Chemours plant in Fayetteville to the river intakes near Wilmington. Sampling similar water parcels in the two areas will provide a more consistent and representative analysis.

**Where will the samples be analyzed?**

Water samples from the first six weeks were analyzed by two independent laboratories, a certified facility in Colorado, and an EPA laboratory in the Research Triangle Park near Raleigh. The state is contracting with other laboratories to analyze additional samples.

Samples from DEQ's testing of drinking water wells adjacent to the facility were sent to Gel Laboratories in Charleston, S.C., for analysis. Chemours sent its samples to Test America Laboratories in Colorado.

**Where can I find results of water sampling?**

Results as well as information about GenX and sampling locations can be found online at the web page DEQ developed for GenX at: <https://deq.nc.gov/news/hot-topics/genx-investigation/genx-sampling-sites>

**Why are you taking multiple rounds of water quality samples?**

Taking multiple samples will give the most accurate data. This will help us to better understand how much GenX was currently in the river at the time of testing and provide more current data to help evaluate potential health impacts.

**Has the federal government published health recommendations for GenX?**

EPA has not published health recommendations for GenX.

**Is it safe to eat fish from the Cape Fear River?**

There are no fish advisories in place related to GenX. A list of statewide and location-specific fish advisories related to other contaminants is available at:

<http://epi.publichealth.nc.gov/oeefish/advisories.html>

**How are drinking water standards developed?**

Like other states nationwide, North Carolina has adopted and implemented federal drinking water standards established by the EPA. The standards take into account several factors, including the health benefits, efficiency and cost of removing waste from a drinking water system.

**GenX has been described as an "emerging contaminant" or compound. What does that mean?**

Under the Unregulated Contaminant Monitoring Rule, the EPA gathers data about select unregulated contaminants to determine how often they appear in drinking water and at what levels. The EPA uses that data along with relevant health effect studies to determine if regulation is necessary, and if so, at what levels. For information on the Unregulated Contaminant Monitoring Rule, please visit:

<https://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule>

**How did the state learn that GenX is in the Cape Fear River?**

The EPA and Detlef Knappe, professor of Civil, Construction and Environmental Engineering at N.C State University, conducted a study that identified the presence of GenX in the Cape Fear River. The report was produced in conjunction with EPA and reflects the importance of emerging technologies being used to detect unregulated contaminants. It is not unusual for unregulated contaminants to come to light as technology gets better at detecting them.

**What about other related chemicals that might be in the water?**

The same report from Knappe included results for several other chemicals in the same fluorinated family of compounds. Concentrations of older “legacy” chemicals (PFOA and PFOS) did not exceed the EPA Health Advisory level of 70 ng/L in the lower section of the river near Wilmington. For some newer or “emerging” chemicals, specific levels could not be measured due to limitations of current laboratory testing.

**What do you know about the health effects of these other chemicals?**

Limited information is available about the potential health effects of these newer emerging chemicals.

**What is the state doing to address the limited amount of information about GenX and the other chemicals?**

DHHS is reviewing all available health data to better understand and communicate possible health risks for the other related chemicals.

Also, Governor Cooper on Aug. 1 expanded a state science panel to help guide state officials on ways to better protect public health and the environment from new or unregulated chemicals. A new charter for the panel was drawn up and signed by secretaries for DHHS and DEQ. The panel’s new charter expands the scope of the Secretary’s Science Advisory Board on Toxic Air Pollutants and changes its name to the Secretaries’ Science Advisory Board.

Among its new duties, the panel will perform or recommend reviews and evaluations of contaminants released to the environment; act as consultants on DEQ’s determinations to regulate releases of contaminants; assist both agencies in identifying contaminants of emerging concern and help determine whether the contaminants should be studied further; assist the secretaries in providing expertise to evaluate the human and environmental impacts of exposure to hazardous contaminants; and provide input to DHHS as the agency establishes health goals for emerging contaminants.

**Is DEQ testing for these other chemicals?**

DEQ is testing for the other unregulated chemicals that Knappe identified in his report. The agency has met with Knappe to discuss his research and is working with the EPA’s lab in Research Triangle Park and others to replicate his team’s analysis using current water samples.

**How can GenX affect my health?**

There is some information available about the health effects of GenX, but it is limited. Laboratory studies in which animals were exposed to different levels of GenX did show adverse effects to the liver and blood, along with liver, pancreatic, testicular and uterine cancers, but there is no information about whether these or other health effects would be seen in humans. A recent review of cancer rates over the last 20 years in Bladen, Brunswick, New Hanover and Pender counties indicated that the rates in those counties were generally similar to the statewide rates of pancreatic, liver, uterine, testicular and kidney cancers. However, no conclusions can be drawn as to whether GenX or any other specific exposures contributed to cancer rates that were examined.

At the request of Governor Cooper, the CDC has committed to doing an assessment on the possible longterm health effects of GenX. DHHS has reviewed existing research studies and is working with the EPA, CDC and academic researchers to gather more health information about GenX and related chemicals.

### **What is the DHHS health goal and what does it mean?**

When there is not a federal standard and sufficient scientific information is available, DHHS can develop and issue a health goal that is non-regulatory and non-enforceable.

Health goals are based on evolving toxicological data and, as such, are considered provisional. It is subject to further refinement based on consultation with federal agencies and other partners, and the introduction of new research and scientific information, or new standards or levels from the EPA.

The DHHS health goal for GenX is 140 parts per trillion. Recent testing shows that levels of GenX in finished water samples in the lower Cape Fear region are below the health goal and trending down. This health goal not a boundary line between a “safe” and “dangerous” level of a chemical. Rather, it represents the concentration of GenX at which no adverse non-cancer health effects would be anticipated in the most sensitive population over an entire lifetime of exposure.

More information about the health goal is available at:

<https://ncdenr.s3.amazonaws.com/s3fspublic/GenX/NC%20DHHS%20Risk%20Assessment%20FAQ%20Final%20Clean%20071417%20PM.pdf>

### **Are there home water filtration systems that can remove GenX?**

There is not enough information to support the recommendation of any specific filtration method (e.g. reverse osmosis, granular activated carbon, etc.) to remove GenX from water. Research into filtration methods is ongoing and new information will be shared as it becomes available.

Preliminary research suggests that the best method to remove GenX from water is with a reverse osmosis filter system. Filtering water through activated charcoal or activated carbon has not been proven effective at removing GenX.

### **Has the federal government published health recommendations for GenX?**

EPA has not published health recommendations for GenX, but they are currently working on their own health assessment for GenX. Should the EPA release a recommended level for GenX, DHHS would withdraw its health goal.

### **Is there a blood test or body scan to determine if I have GenX in my body?**

We are not aware of any lab that is currently conducting blood tests or other types of tests for GenX. Even if such tests were available, the significance of the results for a person’s health are not known.

### **Why are you testing private water wells near the Chemours Fayetteville Works facility?**

DEQ and Chemours collected drinking water well samples as a follow-up to contamination found in the groundwater on the Chemours’ property. Samples were collected to determine if the contamination on the Chemours’ property has traveled to nearby drinking water wells.

### **Why not test all private water wells in the area?**

DEQ decided to sample wells closest to the facility as part of a phased approach to sampling. It is sampling to determine the edge of the contamination plume. Once it has results from this round of sampling, it will determine if further sampling is needed. Chemours collected samples from drinking water wells within a mile of the facility.

### **What are you testing for?**

DEQ’s sampling plan tests for GenX, PFOA and PFOS, which were detected in the preliminary test results from the industrial wells at Chemours’ facility. Chemours is only analyzing for GenX.

**What are you doing to notify well owners of the concentration levels in their drinking well water?**

As DEQ receives results from both its and Chemours' sampling, it is notifying well owners whose wells show concentrations of GenX above the state's provisional health goal and providing guidance on how to use their water. DEQ staff began calling well owners the week of Sept. 25 to provide those results and answer questions. It has also had two community information sessions to address any concerns.

**Why is Chemours providing bottled water?**

After preliminary results from private water well sampling showed concentrations of GenX above the state's provisional health goal, DEQ directed Chemours to provide bottled water to those residents whose wells tested above the health goal. The company is also providing bottled water to residents who live one mile from the facility. Residents living outside of the one-mile area should contact Chemours to have their well sampled and see if they are eligible for bottled water.

**Can I use my private well water to wash clothes or dishes? What about bathing?**

You can continue to use your well water for bathing, washing dishes and laundry. Use bottled water to rinse food from your garden before eating. Chemours is providing you with bottled water.

**Is it safe to eat the food I grow in my garden?**

Currently, there is no recommendation against eating local produce. DEQ and DHHS are continuing to review the scientific literature related to plant uptake of GenX and other chemicals in the same family (per- and polyfluoroalkyl substances, or "PFAS"). Studies have shown that some other chemicals in the PFAS family can be found in variable amounts in plants and vegetables, but the amount depends on the particular chemical and the plant type. Direct testing of garden produce for GenX has not been conducted by NC DEQ, and to our knowledge results of such testing are not available from other sources at this time. A study conducted by the Minnesota Department of Health found that the amount of exposure to five other PFAS compounds from plants and vegetable sources was much lower than the amount of exposure through drinking water, and concluded that the benefits of growing and eating homegrown produce outweighed the potential risk from low levels of PFAS (<http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/pihgssumm.pdf>).

**Should I drink my private well water if I've been notified that it had concentrations of GenX above the state's provisional health goal?**

We recommend that you do not use your well water for drinking, cooking or preparing baby formula.

**What is the long-term solution to fix this, and how long will it take?**

DEQ is evaluating long-term solutions for the Chemours facility. Currently, possible solutions include: drilling deeper wells, using a filtration system to remove the contamination or connecting residences to municipal water lines. Before a comprehensive solution can be determined and implemented, the extent of the plume must be found. However, Chemours will continue to provide bottled water until a long-term solution is determined.