DELAWARE RIVERKEEPER NETWORK

May 25, 2016

Senator Stewart J. Greenleaf
12th District
Pennsylvania State Senate
711 North York Road
Suite 1
Willow Grove, PA 19090
Senate Box 203012
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Re: Perfluorinated compounds – PFOA and PFOS - in Bucks and Montgomery Counties drinking water

Dear Senator Greenleaf,

It was a pleasure talking with you at the Navy forum last night in Horsham. We know you are concerned about water contamination by Perflourinated Compounds (PFC) in the drinking water of residents in your District. As you know, Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonate (PFOS) have contaminated water in the vicinity of the former Naval Air Station at Willow Grove, the Horsham Air Guard Station and the Naval Air Warfare Center in Warminster. These highly toxic compounds have been found here at high levels in groundwater and tap water through sampling required by the U.S. Environmental Protection Agency (EPA), carried out by the Navy and local water authorities.

Delaware Riverkeeper Network (DRN) is extremely concerned about the presence of PFCs in the drinking water surrounding these military bases.

DRN has been working on the problems posed by the presence of PFCs in our regional environment since 2005 when our staff collected tap water samples in the neighborhoods close to DuPont's Chambers Works facility in Deepwater, New Jersey on the Delaware River. We suspected that there may be a problem because of news reports about a lawsuit that had been brought in West Virginia against DuPont for releasing PFOA into the environment there. Our sampling revealed the presence of PFOA in the drinking water being used by people in the local

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community. We notified the residents and filed the information with New Jersey Department of Environmental Protection (NJDEP), setting off alarm bells and a chain of events that eventually led to NJDEP investigating the occurrence of perfluorinated compounds throughout the state and the issuance of a guidance level of .04 ppb for PFOA in 2007. Since then, much more has occurred regarding public knowledge and inquiry into this nationwide problem but, unfortunately, not enough government action has resulted.

Due to widespread presence in the environment and people's blood – PFOA has even been found in polar bears in the Arctic – and due to the highly toxic and durable nature of these compounds, the U.S. Environmental Protection Agency (EPA) took several actions to stop the use of PFCs in the United States. Of importance was the establishment of the stewardship program to phase out the manufacture and use of PFCs and the requirement by EPA that PFCs must be reported by dischargers and users to the agency. In 2012, EPA added PFOA and 5 other PFCs to the list of contaminants to be monitored in a selection of public water systems across the nation.[1] The data is reported to EPA under the Unregulated Contaminant Monitoring Rule 3 (UCMR3) and is publicly available.[2] As you know, this mechanism is how many local water purveyors and the public discovered the presence of PFCs in their water supplies, including your District.

The PFOS and PFOA levels found in the water in Bucks and Montgomery Counties are startling and rise to the top of the list as needing immediate action. Sampling done in Warminster, Warrington and Horsham Townships report that the groundwater that feeds public and private wells there are among the worst in the nation.[3] Subsequent sampling of local water supplies have confirmed the continuing presence of high levels of these compounds, several results showing even higher levels than the UCMR3 data.

As you know, several water wells were shut down based on the Environmental Protection Agency's (EPA) short term health advisory that was originally in place (0.4 ppb for PFOA and 0.2 ppb for PFOS) and more wells have been shut down because they contain PFC concentrations above the newly released health advisory level set by the EPA (0.07 ppb for PFOA and PFOS, combined or separate). But the contamination has not been removed from the groundwater aquifer and due to the durable nature of these compounds (they do not break down in the environment) the likelihood of these contaminants remaining in the local environment and moving and entering both private and public wells in the vicinity of the bases is just as great now as it was before this problem came to light.

The Courier Times/Intelligencer, a local news organization, reported "…private wells reached as high as 3.8 ppb for PFOS, or 19 times higher than the EPA's provisional health advisory, according to the EPA. Levels for PFOA reached 5 ppb, or more than 12 times higher

[1] https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule
[2] https://www.epa.gov/dwucmr/fact-sheets-about-third-unregulated-contaminant-monitoring-rule-ucmr-3
[3] https://www.epa.gov/sites/production/files/2015-09/ucmr-3-occurrence-data.zip

than the EPA level."[4] Illnesses reported in news media in the vicinity of the bases make the need for action to remove all of these toxic substances from the water even more urgent. This data also supports your call for a health study.

Sampling for the UCMR3 report that revealed the presence of PFCs in Bucks and Montgomery Counties (not all are in your legislative district) at levels above specific reporting levels (for PFOA UCMR3 reporting level is 0.02; for PFOS it is 0.04), all in parts per billion or ppb[5] include:

- Warminster Municipal Authority Well 2 PFOA 0.034, PFOS 0.057
- Warminster Municipal Authority Well 5 PFOA 0.023
- Warminster Municipal Authority Well 9 PFOA 0.02
- Warminster Municipal Authority Well 10 PFOA 0.089, PFOS 0.19
- Warminster Municipal Authority Well 13 PFOA 0.122, PFOS 0.16
- Warminster Municipal Authority Well 14 PFOA 0.025, PFOS 0.065
- Warminster Municipal Authority Well 26 PFOA 0.35, PFOS 1.09
- Warrington Township Water and Sewer Wells 1, 2, and 6 treatment plant PFOA 0.12, PFOS 0.67
- Warrington Township Water and Sewer Well 3 PFOA 0.02, PFOS 0.062
- Warrington Township Water and Sewer Well 9 PFOA 0.029
- Quakertown Borough Well 13, PFNA 0.035 and 0.032
- Doylestown Municipal Utilities Authority Cross Keys PFOA 0.21 and 0.13, PFNA 0.026
- Ambler Borough Water Department PFNA 0.029
- Horsham Water and Sewer Authority Well 10 PFOA 0.026, PFOS 0.045
- Horsham Water and Sewer Authority Well 17 PFOA 0.026 PFOS 0.097

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[4] http://www.theintell.com/news/local/well-contamination-by-bucks-county-and-montgomery-county-military-bases/article_2024621a-a727-5ddd-9280-2bc969244a94.html

[5] DRN is only reporting here results for PFOA, PFOS and PFNA; some wells show presence of other PFCs; all data available at UCMR3 occurrence text file for method 537 at https://www.epa.gov/sites/production/files/2015-09/ucmr-3-occurrence-data-by-method-classification.zip

- Horsham Water and Sewer Authority Well 21 PFOS 0.14
- Horsham Water and Sewer Authority Well 26 PFOA 0.29, PFOS 0.7
- Horsham Water and Sewer Authority Well 40 PFOA 0.063, PFOS 1
- Aqua PA, Bristol PFOA 0.02 and 0.026

Other places in the nation where PFC contamination has been found are taking action to catch all of this contamination, action we need here. The Vermont Department of Health has set a health level of 0.02 ppb or 20 parts per trillion (ppt) for PFOA and a new interim groundwater quality enforcement standard of 0.02 ppb for drinking water and a new interim preventive action level of 0.01 ppb[6], much lower than the EPA short term or long term ("lifetime") levels. The Vermont Department of Health points out that they based their calculations on the same science that EPA used but "…Vermont accounts for exposure to children early in life", not solely on exposure to adults like EPA does.[7]

The current guidance level recommended of 0.04 ppb set by New Jersey almost 10 years ago is now out of date and not protective of public health considering the considerable amount of toxicology data and reports since the guidance level was set by NJDEP in 2007. Up to that time, only developmental effects in rats had been studied and rats are not a good model for humans due to differences in blood. New Jersey is researching all the scientific information available and, according to the New Jersey Drinking Water Quality Institute, will be making a recommendation based on updated evidence in the near future.[8] It will most likely be a stricter standard than .04 ppb and it will definitely be below the EPA provisional advisory level of 0.4 ppb or the EPA "lifetime" advisory of 0.07 ppb. A recent study on PFOA at Harvard University concluded that health effects occur at a much lower level than any of the standards adopted so far (.001 ppb)[9] and since the compounds build up in human blood, even trace levels can be dangerous.

Chief among the new bodies of data and findings available for PFOA are those from the court-ordered C8 Health Panel and the C8 Health Project in West Virginia, related to the Dupont facility there. Among the conclusions of this multi-year study of human subjects, their blood and scientific reports, it was found that PFOA is correlated with **Kidney Cancer, Testicular Cancer, Thyroid Disease, High Cholesterol, Pregnancy-Induced Hypertension/Preeclampsia, and Ulcerative Colitis**.[10] In addition to the six diseases with probable links, the study also verifies probable links to decreased birth weight and decreased response to vaccines. A report reviewing all of the studies on low birth weight concluded that PFOA does reduce human birth weight[11].

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[6] http://drinkingwater.vt.gov/dwrules/pdf/interimgwqstandards_2016.pdf
[7] http://healthvermont.gov/enviro/pfoa/PFOA_health_facts.pdf
[8] http://www.nj.gov/dep/watersupply/g_boards_dwqi.html
[9] http://m.new.sagepub.com/content/25/2/147.long
[10] http://www.c8sciencepanel.org/newsletter10.html
[11] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4181929/pdf/ehp.1307893.pdf

The scientific studies on PFOA make it very clear that low levels of exposure to PFOA build up in the body over time. That means that even very low drinking water exposure increases blood levels over the levels found in the general population, risking disease and adverse health effects. Infants are exposed through breast milk and also through formula that uses contaminated water. Since infants and children are susceptible to developmental effects, the impact is even greater than on adults. These facts show us that fetuses, infants, and children are being exposed to the risk of disease and developmental abnormalities from ingesting even low levels of PFOA.

There is no question or uncertainty about the risks people are being exposed to if they drink water contaminated with PFOA. It is a fact that people who have PFOA in their blood at dangerous levels are more likely to develop these diseases than those who do not. The concern for anyone who has been consuming the water, even on a short term basis, and for those in the region around the bases who have been drinking water contaminated with PFOA and PFOS for years is very real and children who have been drinking this water, even at low concentrations, during their short lives are at great risk. Infants and children consume more water per body weight than adults so receive greater "doses" from contaminated water, another important reason they are especially vulnerable.

We also know that the reporting levels set by the EPA UCMR3 Rule of 0.02 ppb for PFOA and 0.04 ppb for PFOS are set too high; laboratories can test well below that level and, considering current scientific reports, they should because of the toxicity of these compounds. Many water systems may have PFOA and PFOS in the water they provide to consumers but they do not know it because the water is not tested to or reported at a low enough level to find where it is occurring. Contaminated water can be "falling between the cracks" and making its way to the taps in people's homes.

Those wells that have PFCs below the UCMR3 reporting levels and those wells that show levels below EPA's new drinking water advisory level are simply not recognized so nothing is done about them. People who are drinking water that contains PFCs at a concentration that does not exceed the EPA 0.07 level are still at risk. They are drinking water laced with toxic compounds that magnify in the blood over time and through volume of exposure, so drinking even tiny amounts below the health advisory level EPA says is safe can increase the potential for a person to develop a disease or suffer adverse health effects associated with PFOA and PFOS. This is unacceptable.

Delaware Riverkeeper Network advises that treatment be installed on the entire water system, public or private, so that all water is filtered before it goes to the tap. This is the most reliable way to keep ahead of the moving target of dangerous levels of these compounds. Pollution plumes migrate, ground and surface water moves and changes due to various natural processes and human-caused impacts, and sources of contamination change, making it likely that where pollution surfaces to a water well at one point in time may shift to another well or to a greater or lesser concentration at another time. Simply shutting down wells that exceed the EPA limit is simply not an effective approach and may allow contaminated water to be used without

people knowing it. To protect people who are drinking water from this region's aquifer and surface waters day in and day out, treatment must be provided on the whole system, after blending and mixing and before it is available for use.

This is important for Willow Grove, Horsham and Warminster because this is the region where the firefighting foams were released into the environment and are known to have seeped into the groundwater. We point out that the $3.9 million dollar agreement reached between Warminster Municipal Authority and the Navy could be falling far short of what will be needed to address the full extent of the contamination and, in the meantime, some people are still drinking contaminated water. The Navy, at their expense, should immediately install treatment systems on all water systems for the region.

New Jersey Drinking Water Quality Institute has already conducted extensive research and analysis of the best treatment systems available to remove PFCs from water and has published this data on their website: http://www.nj.gov/dep/watersupply/pdf/pfna-pfc-treatment.pdf. Water providers are currently using carbon filtration to remove PFCs successfully. The treatment is not new, has been used in New Jersey for many years to remove PFCs from both public water systems and individual water wells (Point of Entry Treatment Systems) and is proven to be effective and safe.

We are alarmed **that these military facilties are still using firefighting foams containing these compounds and other dangerous PFCs** such as PFHxS (Perfluorohexanesulfonate) and PFNA (perfluorononanoic acid). Considering that the distribution of PFCs has not ceased, we advocate in the strongest possible terms that these PFC compounds immediately be taken out of use. Will you request the facilities to certify that they are no longer using firefighting foams that contain PFCs? We consider this to be an urgent issue that needs immediate attention and ask that you take this step for all of us.

We have written to Governor Tom Wolf advocating that the state itself should develop mandatory safe drinking water standards (or maximum contaminant level – MCL) for PFOA and PFOS that are truly protective of human health, reflecting the fact that Bucks and Montgomery Counties are confirmed to have water that tested amongst the highest levels in the nation for PFOA and PFOS and thousands of people are being exposed. DRN advocates for PFOA and PFOS to be removed completely from our drinking water, not only removed down to the EPA advisory level of 0.07 ppb, which does not provide adequate protection. This means treating water supplies so that PFOA and PFOS are not present at all. The technology is available now to do this; there is no valid excuse to not have treatment provided to remove all PFCs from the drinking water. These toxic compounds do not occur naturally; they have been introduced to our drinking water and environment by dischargers and do not belong there.

Delaware Riverkeeper Network urges that you, as an elected official, investigate Dupont and 3M as the ultimate responsible parties since these are the corporations that invented and manufactured the perfluorinated compounds that went into the products discharged to the environment at these facilties. Are these wealthy corporations being probed for culpability to

identify all parties responsible that should contribute funds to address this crisis? Cleanup of the contamination shouldn't be delayed, stymied by or excused from immediate action by a lack of available money.

Recent national investigative news articles have highlighted the toxic legacy of Dupont, 3M and other sources of PFC pollution. A series by Sharon Lerner in The Intercept chronicles PFC pollution, corporate responsibility, and government inaction[12]. An investigation of the Bucks County situation was included recently in Lerner's report "Poisoning the Well" about the effects of toxic firefighting foam used here[13]. On January 10, 2016 the New York Times featured an article by Nathaniel Rich about attorney Robert Bilott who has spent his career battling Dupont to expose the truth about the dangers of PFOA[14]. Another investigation by reporter Mariah Blake, published in the Huffington Post, told the Parkersburg, West Virginia story in detail[15]. And the well-researched and valuable reporting by the Bucks County Courier Times and the Intelligencer has focused attention on the complex issues involved with the alarming contamination here in Bucks and Montgomery Counties.

We support Representative Todd Stephens' request for a health study. Additionally, there needs to be testing of human blood of residents who have been drinking this water and living near or working on land that has been contaminated at and in the vicinity of Willow Grove, Horsham Air Guard, and the Naval Air Warfare Center. Blood sampling will provide people with the information they need; it is the only reliable way to ascertain if an individual has been exposed. Water sampling is a snapshot in time; blood sampling shows what has occurred over time and is still present in the blood. Health studies can look to see if certain diseases or known health conditions occur in people who are found to have PFCs in their blood. This was done in the C8 Health Studies and, as we mentioned earlier, correlations with disease and dangerous health conditions were found. We need that level of analysis to be done here. People can then make informed decisions about health care and diagnostics, exposure, and family decisionmaking. People have a right to know this very personal information.

Ultimately the state needs to work with federal agencies to stop the release and/or migration of these pollutants and oversee the removal of PFCs from our environment; we ask you to advocate for that as well.

We also urge you to advocate for a groundwater cleanup standard to be set by EPA or the Pennsylvania Department of Environmental Protection that will apply to the regions around the military bases here so these compounds must be taken out of the environment by and at the expense of those responsible for the contamination. We suggest Vermont's health and environmental standards and the scientific studies mentioned above provide ample information

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[12] https://theintercept.com/search/?s=Teflon%20toxin

[13] http://bit.ly/1l9DJcz

[14] http://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html?_r=0

[15] http://highline.huffingtonpost.com/articles/en/welcome-to-beautiful-parkersburg/

and guidance to require that these highly toxic compounds be removed. We ask you to advocate for this at the state level and in your communications with the Navy and EPA.

There are many other actions that need to be taken, especially considering that the distribution of PFCs is not over; this is an ongoing contamination issue. PFCs, by design, are resilient to breakdown by natural processes – that is why they are used in plastics and other products like firefighting foam and consumer products that need to be resilient, heat resistant and durable. So they stay for years in the environment, moving into different media such as groundwater, surface water, soils, sludge at waste treatment facilties, and even into the air. From these media they make their way into our blood, accumulate there to become increasingly dangerous and increase the risk of disease.

There needs to be more comprehensive analysis of these base sites to identify the migration of the contamination plumes by a thorough sampling of all drinking water sources and other media such as soil and vegetation to locate these compounds, map their presence, where they have migrated to and the specific locations of the sources of contamination at the lowest levels that can be detected.

To make this happen we need all hands on deck, all agencies and officials involved, and all responsible parties participating in the cleanup and the cost of making our water and environment safe from these toxic compounds. Your leadership is needed. As mentioned, we have written to Governor Wolf and also to three of our U.S. Congressman who have expressed concern to ask for a cooperative action effort and to our Pennsylvania State Representatives. We need to get people off contaminated water now, even trace amounts, and we need PFCs removed from all drinking water and our environment.

Thank you for your consideration.

Sincerely,

Maya van Rossum
the Delaware Riverkeeper

Tracy Carluccio
Deputy Director