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Unexplained PFAS Contamination at Petroleum Spill Site Mystifies Environmental Regulators

Publications

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The North Carolina Department of Environmental Quality (DEQ) is continuing to investigate an unexplained source of per-fluorinated compounds (PFAS) contamination that may be associated with the deployment of a fire-fighting compound in response to a major gasoline release by the Colonial Pipeline system on August 14, 2020. The Colonial Pipeline, which spans 5,500 miles from Houston, Texas, to Linden, New Jersey, runs through a number of southern and mid-Atlantic states, including North Carolina. The active pipeline delivers an average of 100 million gallons of liquid petroleum products each day. On August 14, 2020, a leak in the pipeline resulted in the release of approximately 1.2 million gallons of gasoline into the environment near the town of Huntersville, North Carolina. The release was the largest onshore gasoline spill in the United States in over 20 years and in connection with Colonial Pipeline's emergency response to that release, Colonial Pipeline sprayed a commonly used fire suppressant known as F-500 encapsulate on the contaminated land to minimize the risk that vapors from the release would ignite.

However, following Colonial Pipeline's initial emergency response, new questions have emerged regarding PFAS that was detected at the release site. As part of the ongoing efforts to investigate the nature and extent of the gasoline release, DEQ directed Colonial Pipeline to collect samples from the F-500 encapsulate and test that encapsulate for various PFAS formations. The resulting test data found elevated levels—as high as 22,600 parts per trillion ("ppt")—of at least three different PFAS compounds. Samples of a nearby surface water showed PFAS concentrations ranging from 1 ppt to 14.9 ppt.

The source of the PFAS is not readily apparent, however, because as verified by the Safety Data Sheet , F-500 is not known to contain PFAS compounds. In fact, F-500 acts differently than aqueous film forming foam (AFFF) to fight fires. AFFF is intended to separate oxygen from the fuel while F-500 works by removing the heat, neutralizing the fuel, and interrupting the free radical chain reaction. As such, it does not rely on fluorine compounds for effectiveness.

It is possible that the source of the PFAS identified by Colonial Pipeline was a result of residual AFFF residing in the storage tank or in the fire-fighting equipment that was used to dispense the F-500

encapsulating agent. The F-500 was transported to the site by the Pelham Alabama fire department and the fire-fighting equipment that sprayed the F-500 was supplied by the Hunterville Fire Department. However, notwithstanding that the equipment was supplied by the municipal fire departments and that the F-500 is not known to contain PFAS compounds, DEQ has still requested that Colonial Pipeline provide data demonstrating that there have been no PFAS impacts to soil or groundwater as a result of the emergency response.

This a cautionary tale for environmental health and safety professionals charged with maintaining emergency spill response materials, including fire suppressant products, for their respective organizations. Such professionals are faced with a unique challenge of ensuring that products maintained for spill containment or remediation purposes are not only fit for these purposes, but also that these products do not contain chemicals that pose a potential threat to human health or the environment. This challenge is particularly acute with PFAS, of which there are over 5,000 different formulations which can be found in a large variety of different consumer and industry products. Even if a decision is made to swap out one product that may historically contained PFAS with a new product that is purportedly PFAS-free, care should be taken to ensure that product distribution equipment is PFAS-free. Otherwise, one might find oneself in the unfortunate position of having to defend against claims relating to PFAS impacts in the environment.

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