

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT (Erica Kalve and
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MEETING DATE: May 13, 2020

ITEM: 7

SUBJECT: **Per- and Polyfluoroalkyl Substances (PFAS) Overview and Statewide Investigation Efforts – Status Report**

DISCUSSION: The purpose of this agenda item is to inform the Board of the status of the statewide per- and polyfluoroalkyl substances (PFAS) investigation and findings within our region. We provide background information on the nature, use, and toxicity of PFAS, and discuss screening levels for drinking water and ecological protection, investigation findings, and next steps.

Background

PFAS are a broad class of more than 6,300 individual human-made substances. The “per” compounds have fully fluorinated carbon backbones, and they are very stable and persistent. The “poly” compounds have some hydrogen attached to their carbon atoms, and some of the “poly” compounds can degrade to “per” compounds. PFAS have been used since the 1940s in a wide range of industrial and commercial applications such as surface coatings and protectant formulations due to their unique ability to repel oil, grease, and water. Common products with PFAS include clothing, carpets, fabrics for furniture, leather products, adhesives, paper packaging for food, and heat-resistant/non-stick cookware. PFAS have been used as processing aids and stabilizing baths in some manufacturing and plating operations. They are also used in certain firefighting foams and commonly detected at fire training and response sites.

Many PFAS are mobile, persistent, and bioaccumulative. These include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), the most extensively produced and studied of these chemicals. Despite the phase out of U.S. production of PFOS by 2002 and PFOA by 2015, they are still prevalent in the environment and commonly found in humans. The Centers for Disease Control and Prevention measured PFOA and PFOS in the blood serum of 98% of participants aged 12 years and older who took part in the National Health and Nutrition Examination Survey since 1999, indicating widespread exposure to PFAS in the U.S. population. Certain PFAS have also been found to be potentially toxic to humans and aquatic animals such as birds and marine mammals.

The primary PFAS human exposure pathway is ingestion of contaminated drinking water and food contaminated by PFAS-coated food packaging, bioaccumulation through the food chain, and crop uptake. Human exposure to unsafe levels may result in adverse health effects including cancer, liver effects, immune effects, thyroid effects, cholesterol changes, and developmental effects to fetuses.

Investigation Plan

The State Water Board's Division of Water Quality (DWQ) and Division of Drinking Water (DDW), with input from the regions, have developed an investigation approach to evaluate the presence of PFAS in California. Last year, State Water Board sent investigation orders to 4 airports, 29 landfills, and 25 chrome plating facilities identified for initial testing and/or follow-up investigations in our Region. The military has also conducted testing at 6 bases. Over 100 public supply wells have also been tested in our Region. Water systems have reported results to date, and the results are publicly available on the State Water Board [PFAS website](#). DWQ plans to send similar orders to wastewater treatment plants, oil refineries, and bulk terminals later this year. DDW will require sampling of water supply wells near these facilities.

Screening Levels

There are screening levels for PFAS in drinking water. In August 2019, DDW lowered the health-based advisory Notification Levels from 14 parts per trillion (ppt) to 5.1 ppt for PFOA and from 13 ppt to 6.5 ppt for PFOS. Drinking water system operators must notify the public if PFOA or PFOS levels in their water exceed a Notification Level. Exceedances also trigger further monitoring and assessment of the water supply. In February, DDW similarly lowered the Response Levels at which they recommend removal of a drinking water source from service from 70 ppt to 10 ppt for PFOA and 40 ppt for PFOS. DDW has requested the Office of Environmental Health Hazard Assessment (OEHHA) to develop public health goals for both PFOA and PFOS, which is the next step toward establishing enforceable maximum contaminant levels for drinking water. DDW has also requested OEHHA recommendations for developing Notification Levels for other PFAS chemicals detected in drinking water supply wells in California. More information can be found on the State Water Board [PFOA and PFOS in drinking water website](#).

Groundwater Findings and Next Steps

Early findings suggest that further investigation of groundwater may be needed where facilities have detected PFAS. Results from some of our Region's public supply wells also point to the need to investigate for additional potential sources.

We are developing a prioritization approach to help us identify potential sources of contamination. Prioritization will build on criteria used by State

Board such as the current and historic use of PFAS in specific industrial/manufacturing processes or fire-fighting efforts. However, our effort will also consider the potential for spill or discharge to the environment and will initially focus on facilities with proximity or connection to affected supply wells or ecological resources that could be affected. Should additional resources become available, we may focus new groundwater investigative efforts in areas that are critical drinking water sources but currently lack PFAS data due to gaps in the statewide approach.

Surface Water Findings and Next Steps

Through the statewide investigative approach and our own initiative, we have also found relatively high PFOA/PFOS levels at some Bay-margin sites associated with military fire protection training areas and airports due to the use of PFAS-containing fire-suppression foams. We have developed PFOA and PFOS Environmental Screening Levels (ESLs) for ecological protection. The ESLs are based on published scientific studies that have evaluated adverse effects to aquatic species and biomagnification potential to people that consume seafood. The ESLs are non-regulatory levels used as guidance to identify conditions that *could* be a concern. Their use is not mandatory, and any alternative levels or approaches that are supported by adequate technical documentation will be considered.

We have also been investigating PFAS in the Bay through the Regional Monitoring Program since the mid-2000s. Concentrations of PFOS in Bay harbor seals and bird eggs in 2004 and 2006 were some of the highest detected globally. More recent monitoring indicates decreases in PFOS concentrations likely due to its 2002 phaseout. However, concentrations of other PFAS, such as PFOA, have remained relatively constant, albeit it at lower levels overall. We have investigated the urban stormwater and municipal wastewater pathways to the Bay. We are currently in the second of a new three-year investigation in PFAS in urban stormwater, and we are planning an updated and more comprehensive investigation of municipal wastewater this year.

RECOMMEN- DATION:

This is an informational item only; no action is necessary.