

Issues regarding Futenma Air Station and PFOS and Other Chemical Substances (PFOA, PFHxS) in Okinawa Prefecture, Japan

Okinawa Prefectural Government

Introduction

The Okinawa Prefectural Government (the OPG), in its role as a regional government, has conducted surveys of PFOS and related chemical substances to understand more about the presence of these substances in the prefecture's environment.

During these surveys, PFOS and related chemical substances were detected in several places in the prefecture, high concentrations of PFOS and related chemical substances exceeding the national provisional standard value of 50ng/L around the US military bases, including Futenma Air Station.

The OPG has applied to the US military for permission to conduct an on-site survey to identify the source of PFOS contamination and has also requested the Japanese government to work with the US to provide the OPG with access to the base for a survey, but permission has not been granted to date, which has caused great anxiety among local residents.

Survey into the source of Organo-Fluorine Compound Contamination Conducted by Okinawa Prefectural Government

The OPG believes that the source of the high concentrations of PFOS and others (PFOA and PFHxS) detected in the spring water and other places around Futenma Air Station is highly likely to be from within the base. The OPG has reached this conclusion based on the state of groundwater flow near the base, and the US military's historical use of Aqueous Film Forming Foams (AFFF), a type of fire-fighting foam that contains PFOS and others. The OPG has applied to the US military for permission to conduct an on-site survey, and has requested the Japanese government to work with the US to provide the OPG with access to the base for a survey, but permission has not been granted to date. Therefore, the OPG has conducted its own surveys around the base to obtain the scientific evidence to identify the source of PFOS contamination in the area.

This investigation began in 2021. A committee was established with experts from various fields, including environmental hydraulics, groundwater engineering, applied geology, environmental risk assessment, and environmental dynamics analysis. The committee has held discussions on the sources and mechanisms of contamination, based on the information obtained from past literature surveys, the monitoring of spring water around Futenma Air Station, and the installation of observation wells.

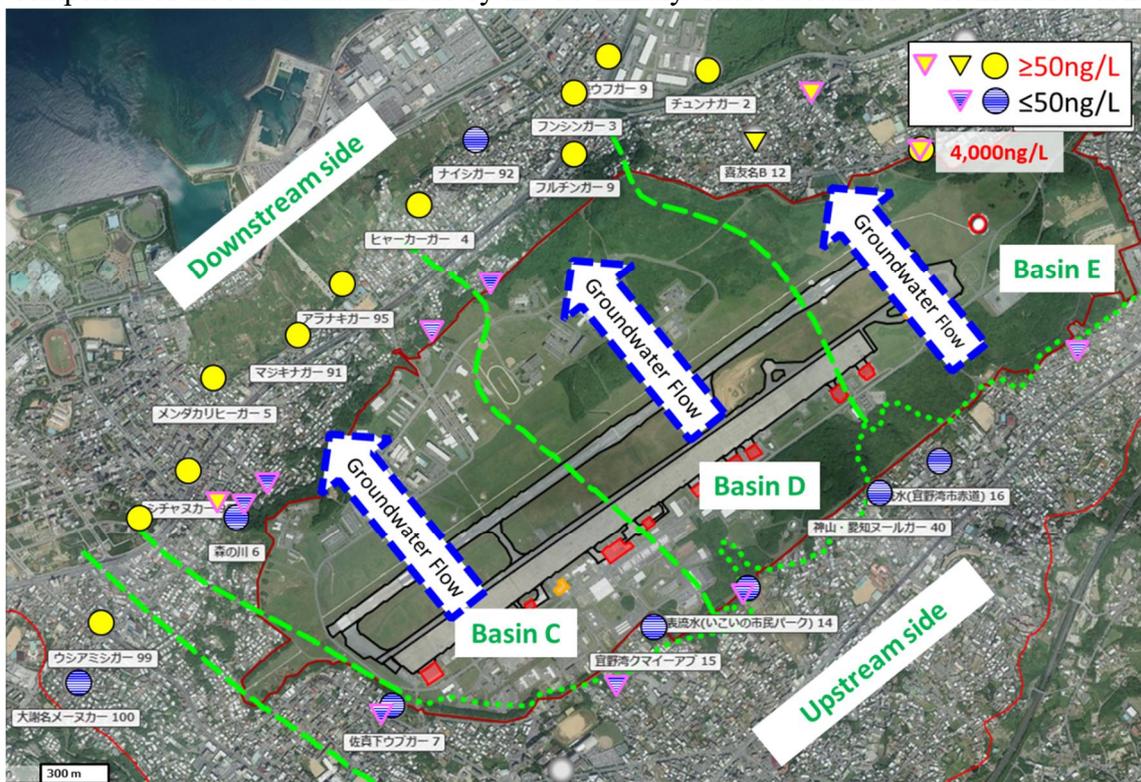
In February 2025, the expert committee concluded that “the results of the surveys to date have largely grasped the mechanisms of contamination, and the likelihood has further increased that Futenma Air Station is the source of contamination of PFOS and other chemical substances (PFOA, PFHxS, 6:2FTS).”

Based on the results of the scientific surveys, the OPG believes that it is highly likely that the source of contamination by PFOS and related chemical substances is located within Futenma Air Station. The Okinawa Prefectural Government has therefore provided the survey findings as a reference material for the report on “Military Activities and Toxic Substances.”

Okinawa Prefectural Government Organofluorine Compound Pollution Source Survey Expert Meeting Materials

1. Survey and Detection of PFOS and Related Chemical Substances (PFOA, PFHxS, 6:2FTS) around Futenma Air Station

This study identified four (4) substances of interest. Three substances (PFOS, PFOA, and PFHxS) are regulated by the POPs Convention and the Law Concerning the Examination and Regulation of Chemical Substances. The fourth substance, 6:2FTS, is presumed to be the oxidized main component of the AFFF that is in use by the US military. These substances were measured at 20



springs upstream and downstream of Futenma Air Station, and also at 12 observation wells that were drilled. The sources and mechanisms of contamination were then examined based on these measurements.

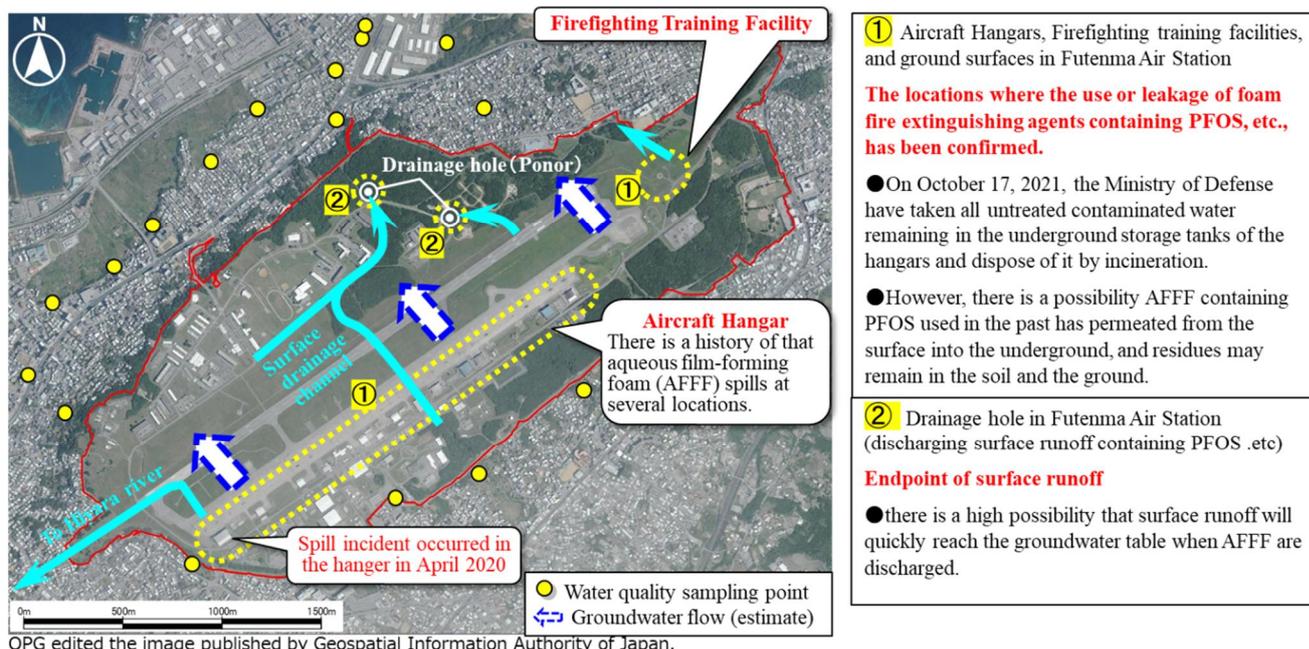
Past surveys and other sources have estimated that the groundwater around Futenma Air Station flows from the southeast side of the base upstream to the northwest, and that the main groundwater basin around Futenma Air Station is roughly divided into three (3) basins (C, D, E in the above map).

The survey found that PFOS and PFOA were detected in the groundwater upstream of Futenma Air Station, however, the combined concentration was below the provisional guideline value of 50ng/L as set by the Japanese government, and the investigation did not detect high concentrations of PFOS and related chemical substances. In addition, a literature survey found no land use upstream of the groundwater that could be a source of PFOS and other chemical substances.

In contrast, high concentrations of PFOS and related chemical substances exceeding the provisional guideline values, such as 4,600ng/L and 1,400ng/L, were detected in the groundwater downstream of the base.

2. Estimation of the Source of Contamination by PFOS and Related Substances around Futenma Air Station

Based on the existing materials and other sources, the possible sources of contamination of PFOS and other chemical substances (PFOA, PFHxS, 6:2FTS) are thought to be ① the hangars and firefighting training facilities within Futenma Air Station, where the use of AFFF has been confirmed,



and ② the drainage hole located at the end of the surface drainage water flow, which may be a place where AFFF could seep into the ground if it leaks or spills.

3. Components of the AFFF used at Futenma Air Station

The main component of the old type of AFFF in use before 2016 was PFOS. It is believed that around 2016, it was replaced with a new type of organofluorine foam that does not contain PFOS or PFOA as its main component.

The main component of this new type of AFFF is thought to change to another organofluorine compound, 6:2FTS, when oxidized in the environment.

Following an AFFF spill accident at Futenma Air Station in April 2020, an analysis of the river water into which the foam flowed revealed that more than 90% of the detected chemical substances (PFOA, PFHxS, 6:2FTS) was 6:2FTS, suggesting that Futenma Air Station had replaced its old AFFF with the new type of AFFF by then.

Measurement Results after the leakage incident (10th Apr 2020) of Aqueous Film Forming Foams in the downstream of the River

Sampling Point	Sampling Date	PFAS (ng/L)			
		PFOS	PFOA	PFHxS	6:2FTS*
200m upstream Oojana bridge Hiyara river	11th Apr 2020	23	18	4.9	20,000
200m upstream Oojana bridge Hiyara river	14th May 2020	8.7	4.4	4.1	210

* The main component of a new type of Aqueous Film Forming Foams (AFFF) is believed to transform into "6:2 FTS" through oxidation or other processes in the environment. Since the measurement began in 2018, "6:2 FTS" has been detected in the vicinity of Futenma Air Station.

4. Summary of the Contents that have been Examined

[Summary]

High concentrations of PFOS, 6:2FTS, and other chemical substances (PFOA, PFHxS) were not detected in the groundwater upstream of Futenma Air Station, and no land use in that area that could be a source of contamination by PFOS and other chemical substances was confirmed. However, the detection of high concentrations of PFOS, 6:2FTS, PFOA, and PFHxS in the groundwater downstream of the base is important evidence that the source of contamination is presumed to be within Futenma Air Station.

The possible sources of contamination by PFOS and other chemical substances are thought to be the hangars and firefighting training facilities at the Air Station where the use of AFFF has been confirmed.

The results of the FY2021-FY2024 surveys have largely grasped the mechanisms of contamination in the E basin, and have lent further credence to the likelihood that the source of contamination of PFOS and other chemical substances is Futenma Air Station.

Conclusion

Up to now, the OPG has requested the Japanese government to allow it to conduct on-site investigations at the US military bases. However, the Japan-US Status of Forces Agreement and the Environmental Supplementary Agreement, both of which leave discretionary authority to the U.S. military, have been obstacles to this request. As a result, the OPG has not been permitted entry to the base, making it impossible to identify the source of contamination.

In addition, the Japanese government has stated that “PFAS has been used for various purposes, so it is difficult to say for certain whether there is a causal relationship with the US military in Japan.” However, based on the results of the scientific surveys around Futenma Air Station, the Okinawa Prefectural Government believes that the likelihood has increased that the source of contamination by PFOS and other substances is within the base.

“Water and Sanitation” is one of the 17 goals of the UN’s SDGs, and the “Right to Obtain Water” is recognized as a basic human right under international law.

The issue of water for Okinawans is a human rights and cultural issue, and it is our right to thoroughly investigate the causes of contamination by PFOS and other chemical substances. However, the situation is such that it is difficult to guarantee the right of the prefecture's residents to water.

We hope that the UN will also urge both the Japanese and US governments to implement measures such as a fundamental review of the Japan-US Status of Forces Agreement, permit the OPG to conduct the on-site inspections of bases, and implement measures against PFOS contamination, in order to resolve the issues of PFOS and other substances in Okinawa Prefecture. We hope that you will support the Okinawa Prefectural Government’s efforts regarding these issues in the future.