

SUMMARY

I OBJECTIVES

The general objectives of this project were (a) to review and assess any monitoring data currently undertaken regarding PFOS, PFOA and related compounds in drinking water and its sources in England and Wales, (b) to develop an accurate and scientifically sound analytical method for the analysis of these compounds, (c) to devise and perform a one-year monitoring study of these compounds at 20 sites across England and Wales, and (d) to identify future research needs.

II REASONS

Perfluorinated chemicals such as PFOS (perfluorooctane sulphonate) and PFOA (perfluorooctanoic acid) have been used in a number of different types of products, including performance chemicals such as: photographic film; surfactant in fire fighting foams; surfactant for alkaline cleaners; emulsifiers in floor polish; mist suppressant for metal plating baths; surfactant for etching acids for circuit boards; pesticides; active ingredient for ant bait traps; and dirt repellent treatments for textiles (e.g. carpets, home furnishing and leather) and paper (e.g. food containers and masking papers). PFOS has been shown to be toxic, persistent and bioaccumulative in the environment. Although already a focus for restriction within the European Union, its profile as a potential micropollutant in water was raised following the Buncefield Oil Depot fire in December 2005 when fire-fighting foam containing PFOS was used.

III CONCLUSIONS

- The review of monitoring data in the UK indicated that no monitoring data were available for PFOA and PFOSA (perfluorooctanesulphonic acid), and only minimal information was available for PFOS, which indicates that it is not generally considered a likely contaminant of UK raw water sources, unless a specific incident has occurred. Little information was available on the treatment options for PFOS removal from raw drinking water sources, and anomalies in the various analytical methods used have been noted.
- The survey of levels of PFOS and PFOA indicated that PFOS does not appear to be a widespread background contaminant of raw and treated drinking water in England. When detected, PFOS concentrations were below the current DWI drinking water guidance levels for England and Wales. Where PFOS was detected at very low concentrations, the water source was considered at higher risk due to a specific incident, or the presence of a local source of contamination (e.g. an airfield).
- Conclusions regarding PFOA are not so clear. However, it does not appear to be a background contaminant of raw and treated drinking water in England.
- Where PFOS and PFOA were detected, source water originated primarily from unconfined aquifers as might be expected if resulting from point source contamination events.
- From the limited data, no apparent trends in PFOS or PFOA concentrations in drinking water exist in relation to the type of treatment, the type of perceived risk in the area, the method of chlorination, or the season.

- Where PFOS and PFOA were detected, the water treatment processes involved did not show any obvious signs of being able to remove PFOS or PFOA. However, it is acknowledged that the Granular Activated Carbon (GAC) present at two of the affected sites is relatively old, and separate studies have suggested that new (or recently regenerated GAC) may be effective in the removal of perfluorochemicals.
- There is no correlation between the presence of PFOS and PFOA in raw or treated drinking water.

IV RECOMMENDATIONS

- To further review the monitoring of PFOS, PFOA and PFOSA being undertaken by the Water Companies and other National Bodies.
- To maintain transparent communication and sharing of information between all interested parties to further the knowledge base on perfluorochemicals.
- To further investigate the removal of PFOS and other perfluorinated compounds during water treatment processes.
- To monitor the use, toxicology and occurrence of other perfluorinated compounds, which may become compounds of concern in the future.