

Summary

i Reasons

Personal care products (PCPs) and domestic cleaning products (DCPs) are a diverse range of products that contain vast numbers of different chemicals. These chemicals may have the potential to reach drinking water supplies via release into the environment through typical use and entry to sewerage and subsequent treatment. Published studies from other countries on the occurrence of substances from PCPs and DCPs, demonstrate that trace amounts of these constituents can reach drinking water. A similar situation may be expected, in England and Wales, however, no information is currently available.

ii Objectives

This study presents an investigation into the potential for ingredients used in personal care products (PCPs) and domestic cleaning products (DCPs) to be present in drinking water. An assessment was also made as to the potential for people to be exposed to these ingredients at higher concentrations from drinking water and bathing than would be anticipated through the intended use of PCPs and DCPs.

iii Benefits

This project has collated available data on 692 chemicals that are commonly used in PCPs and DCPs. These chemicals were screened to develop a shortlist of chemicals that were identified as having a higher potential to occur in drinking water. These 'priority chemicals' were then assessed to compare their predicted exposure via drinking water and bathing to use from typical use. This provides a focus for further work that may be required to assess the potential for PCPs and DCPs to occur in drinking water in the UK.

iv Conclusions

Approximately 690 chemicals were assessed and thirty-three of these chemicals were identified during the data collation and prioritisation exercise as having a high potential for reaching drinking water supplies. The prioritisation was based on parameters such as the physico-chemical properties of the chemicals, the annual consumption tonnages of each chemical and whether studies were available in the public literature reporting their prior detection in drinking water. The potential concentration of these chemicals in drinking water was then modelled. The precautionary estimated exposure to these chemicals via drinking water and bathing was compared to the estimates of exposure to these same chemicals through their intended use.

Out of the thirty-three prioritised chemicals, the models indicated that exposure via drinking water and bathing was significantly lower for nineteen chemicals than would be anticipated through their intended use.

However, ten of the thirty-three prioritised chemicals were predicted to produce levels of maximum exposure through drinking water and bathing close to or greater than would be anticipated through their intended use. Data were lacking for the four remaining chemicals, and therefore a comparison of exposure via these routes could not be conducted.

v Suggestions

Targeted monitoring for the chemicals that appear to have the greatest potential to occur in drinking water could be used to verify the model and inform whether these chemicals are an issue in drinking water in the UK.

Further data collation and development of a relevant exposure model from typical use of the four chemicals that do not have authoritative exposure assessments would enable assessment of these chemicals.

The developed predictive model is precautionary and additional data on removal efficiencies in waste water treatment and drinking water treatment could help refine the model.

Collection and assessment of data on the toxicological properties of those chemicals that have been identified as having the highest potential to reach drinking water in significant concentrations would also inform whether these chemicals are of concern in drinking water supplies.

vi Résumé of Contents

This document describes the approaches used to identify and prioritise the PCPs and DCPs, the development of an exposure assessment process to screen and model the potential exposure to chemicals present in PCPs and DCPs via drinking water and bathing, and a comparison of that exposure with anticipated exposure resulting from the typical uses of PCPs and DCPs.

Stage 1: Data collation and screening of 692 chemicals to devise a list of thirty-three priority chemicals.

Stage 2: Modelling of potential concentrations in drinking waters and comparison with literature data.

Stage 3: Exposure assessment and comparison of potential exposures via drinking water and bathing with exposure from intended use of the PCPs and DCPs.