

# Science for Environment Policy

## Household sources of biocidal active substances assessed

**Sources of biocidal active substances (BAS) in common household products have been assessed in a new study from Germany.** These could potentially be released into wastewater and may be toxic to wildlife and humans. The main household sources of BAS were found to be washing, cleaning and personal-care products, which together accounted for over 90% of the observations of BAS in the products found in homes surveyed by the researchers.

**Households can be a major source of [chemical](#) pollutants.** Unless it is identified by an area's river-basin management plan (under the [Water Framework Directive](#)) that wastewater discharges negatively affect the quality of a water body and that treatment more stringent than required by the [Urban Waste Water Treatment Directive](#) is necessary, then substances in household wastewater are not fully removed by sewage treatment plants, the main target of which is the elimination of organic pollution and nutrients (to avoid eutrophication).

BAS are substances or microorganisms that are used to control other organisms that cause damage to natural or manufactured materials or human health. They are used in many biocidal products (BP), including disinfectants, wood preservatives and pest control products. They are an example of a pollutant released by households and there is growing awareness that they may be harmful to non-target organisms and human health. They may also contribute to increasing resistance against antibiotics. For example, the use of the BAS benzalkonium chloride, a disinfectant, could trigger resistance to fluoroquinolone antibiotics.

The use of BAS and BP is therefore regulated by the [Biocidal Products Regulation](#) in Europe, which requires approval of BAS used in 22 different product types before they can be made available on the market. However, restrictions depend on reliable information about the likely release of biocides into the environment. The specific sources of BAS from households are also not fully understood.

The European Chemicals Agency ([ECHA](#)) lists 262 BAS which are approved under the Biocidal Products Regulation or whose risks are currently being assessed by the EU. However, BAS can be used in other products which are not covered by the Biocidal Products Regulation, including plant-protection products, personal-care products and washing and cleaning agents. The possible environmental risks of BAS due to wastewater emissions from households may, therefore, be underestimated.

This study assessed the prevalence of BAS in different household products. The researchers took product inventories in 131 households in Northern Germany. The inventory covered personal-care products with high release into wastewater (such as shampoo, body wash and hair dye) as well as all washing and cleaning agents and products for the control of pests, such as plant-protection products or BP. Furthermore, pharmaceuticals that control fleas and lice were included.

BAS were found in all households in the study. In total 2 963 products with BAS were identified. The majority of products were washing and cleaning agents (48%) and personal-care products (43%). The remainder (9%) were pest-control products.

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**Contact:**  
[wieck@leuphana.de](mailto:wieck@leuphana.de)

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Overall, 79 BAS were found. Citric acid was the most commonly found substance, recorded 859 times. BPs were found in 75% of households. Disinfectants were the most common group of products found (69%), with insecticides (24%) and repellents (9%) also found relatively often.

The researchers say the study may have missed certain products. For example, products used only occasionally (e.g. outdoor paint) may not be in stock in many households. Some plant-protection products (which comprised less than 1% of products found) may also have been missed as the study focused on indoor household products and may not have included products used outdoors. However, despite this shortcoming, the researchers say their study does provide valuable insight into the sources of chemicals into the environment.

Preventive action in the production and use of biocidal products would be essential to reduce their release into the environment. Only a small percentage of the BAS found in this study were actually in BPs themselves. In total, 64% of the BAS recorded were found in products not covered under the Biocidal Products Regulation. They could, however, be subject to Environmental Risk Assessments (ERA) under the Registration, Evaluation, Authorisation and Restriction of Chemicals ([REACH](#)) regulation, which covers most substances on the market; for example, substances used as a preservative in personal-care products. Despite this, differing use of products means an ERA under different regulations may not fully consider all the environmental impacts of BAS; for example, the researchers say that REACH is not designed for ERAs of substances with intended effects on target organisms.

The study suggests that the environmental release of BAS from households may be underestimated. The researchers say a combined assessment of BAS exposure would be needed to fully assess the risk of such chemicals. As this seems unfeasible, they support further regulation for sustainable use of BAS.

