



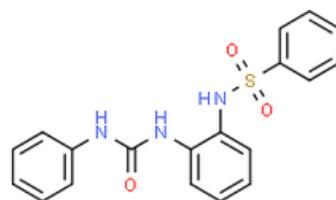
### 1-(2-benzenesulfonamidophenyl)-3-phenylurea

1-(2-benzenesulfonamidophenyl)-3-phenylurea is a substance used in the production of thermal paper, e.g. cash register receipts.

Molar mass:  
367.422 g/mol

CAS:  
215917-77-4

$C_{19}H_{17}N_3O_3S$



The measurements of the LANUV meet the following necessary criteria for clear identification:

- 1) Match of the exact mass,  $\pm 5$  ppm
- 2) Match of the isotope pattern, min. 70 %
- 3) Match of a reference spectrum
- 4) Match of the retention time with the reference substance

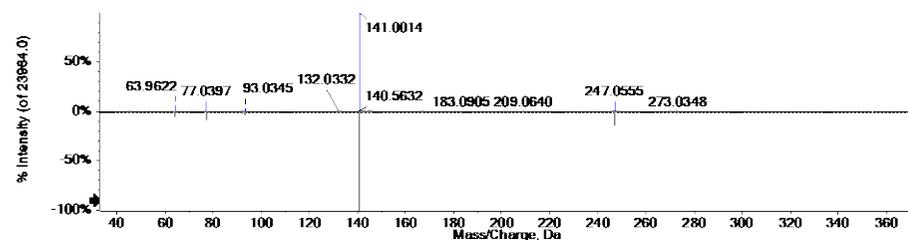


Figure 1: comparison of fragment-ion-spectra, blue: sample river Rur below wastewater treatment plant Düren, grey: reference substance

### Analytics and occurrence

During the regular non-target screening, the Rur at Vlodrop showed a strong increase in a previously unknown mass since the end of 2022.

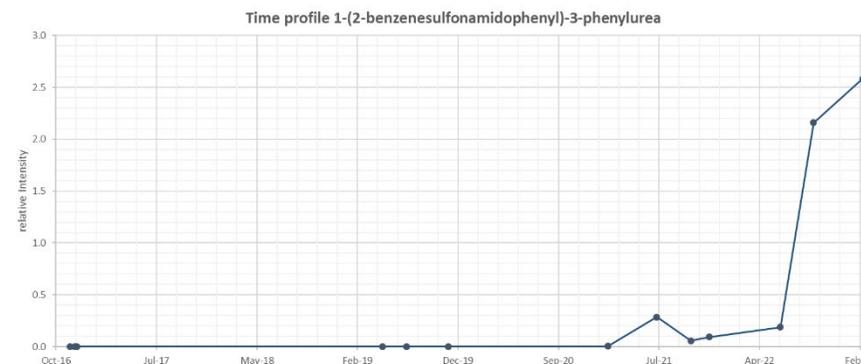


Figure 2: Time profile of 1-(2-benzenesulfonamidophenyl)-3-phenylurea in the river Rur at Vlodrop

Intensive work was done on the identification, which was successfully completed. The unknown is 1-(2-benzenesulfonamidophenyl)-3-phenylurea. 1-(2-benzenesulfonamidophenyl)-3-phenylurea can be detected with the existing method in positive and negative mode. A concentration of 120  $\mu\text{g/L}$  was found in the river Rur below the wastewater treatment plant Düren. Due to the exceptionally high result, the effluents of six nearby companies were sampled in order to identify one or more possible polluters.

Company A:  $< 0.1 \mu\text{g/L}$ , Company B:  $3.8 \mu\text{g/L}$ , Company C:  $20 \mu\text{g/L}$ , Company D:  $7.8 \mu\text{g/L}$ , Company E:  $< 0.1 \mu\text{g/L}$ , Company F:  $4500 \mu\text{g/L}$

In all other water bodies investigated (Erft, Lippe, Ruhr, Rhine, Wupper and Emscher), 1-(2-benzenesulfonamidophenyl)-3-phenylurea was found in low concentrations up to max.  $0.2 \mu\text{g/L}$ .



### Relevance

For 1-(2-benzenesulfonamidophenyl)-3-phenylurea there are no legally binding limit values for drinking water. Therefore, a provisional health orientation value (GOW) of  $3.0 \mu\text{g/L}^1$  is used for the assessment, which has been derived on the basis of the current data situation for precautionary reasons. Due to its properties (poorly biodegradable, potentially persistent, highly water soluble, low adsorption potential) the substance is to be classified as potentially relevant for drinking water on the basis of the data available to date. Data on the behaviour of the substance in drinking water treatment are not yet available.

If the substance is found in surface water from which drinking water is obtained, it is planned to check compliance with the provisional GOW in drinking water.

A recent data set for 1-(2-benzenesulfonamidophenyl)-3-phenylurea is available in the ecotoxicology database of the European Chemicals Agency ECHA<sup>2</sup>. The results show no acute toxicity to algae, daphnia and fish up to the solubility limit in the single digit mg/L range. Results of chronic ecotoxicity tests are not available. A high bioaccumulation potential is not expected

### Further procedure:

As the heavy contamination with 1-(2-benzenesulfonamidophenyl)-3-phenylurea appears to be limited to the Rur, intensive sampling is being carried out at drinking water measuring points along the Rur. In addition, the district government has been informed to contact the relevant health authorities and companies.

<sup>1</sup> Information UBA, derived according to the following criteria  
UBA, 2003. Bewertung der Anwesenheit teil- oder nicht bewertbarer Stoffe im Trinkwasser aus gesundheitlicher Sicht - Empfehlung des Umweltbundesamtes nach Anhörung der Trinkwasserkommission beim Umweltbundesamt.  
Bundesgesundheitsbl - Gesundheitsforsch - Gesundheitsschutz 46, 249-251  
LANUV NRW

<sup>2</sup> ECHA: Benzenesulfonamide, N-[2-[[[(phenylamino)carbonyl]amino]phenyl]],  
<https://echa.europa.eu/de/registration-dossier/-/registered-dossier/27353/1/1>,  
12.07.2023