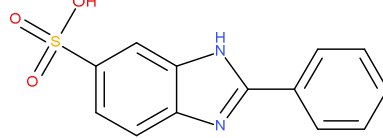




2-Phenylbenzimidazole-5-sulfonic acid

Phenylbenzimidazole-sulfonic acid (trade name Ensulizol) is a UV filter that has been on the market since 1934 and is included in various cosmetic formulations, e.g. sun creams.

mass: 274,29
g/mol
CAS:
27503-81-7
C₁₃H₁₀F₂N₂O₃S



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

- 1) match of the exact mass, ± 5 ppm
- 2) match of the isotope pattern, min. 70 %
- 3) match of a reference spectrum
- 4) match of retention time

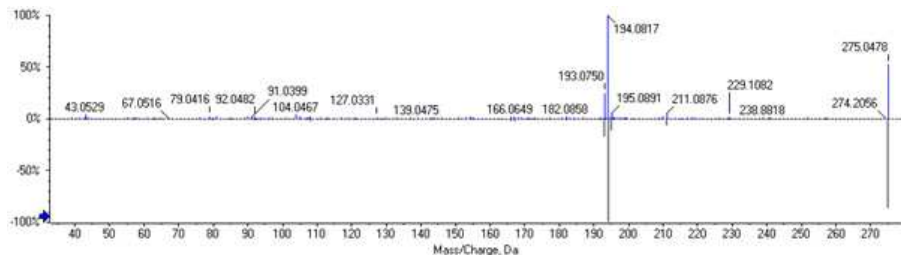


Figure 1: comparison of fragment-ion-spectra, blue: sample Ruhr near Mülheim, gray: reference substance

Analysis and occurrence

Phenylbenzimidazolesulfonic acid can be detected with the existing measuring method in positive mode. It was found in all investigated rivers (Rhine, Ruhr and Lippe) and therefore it belongs to ubiquitous substances. The concentrations are most often between 0.2 - 1 µg/L.

LANUV NRW

Relevance

There are no legally binding limit values for phenylbenzimidazolesulfonic acid in drinking water. Therefore, the general precautionary value of 0.1 µg/L is used for the assessment. Due to its substance properties (water-soluble, remains in the water phase, low bioaccumulation potential), phenylbenzimidazolesulfonic acid is classified as potentially relevant to drinking water based on the data available. Data on the behavior in drinking water treatment are not available. The available ecotoxicological data do not indicate a high relevance (no acute toxic effect up to 100 mg/L). However, results from chronic tests with invertebrates and fish are missing.

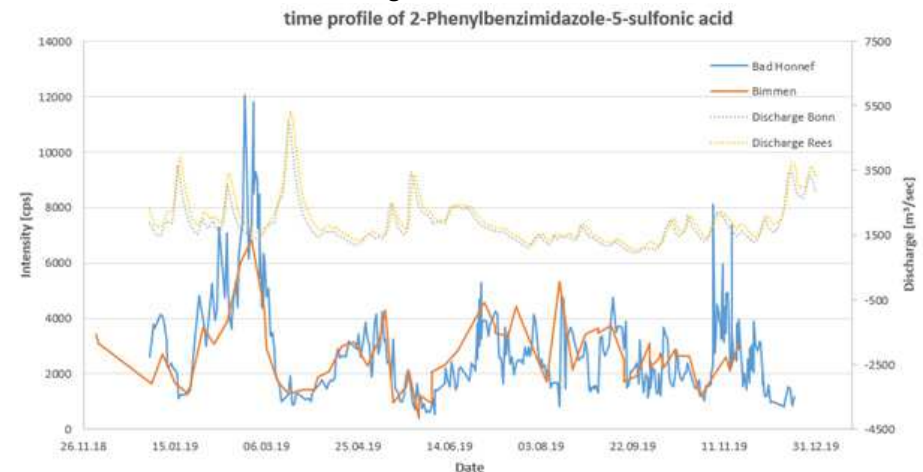


Figure 1: Time profile of Bicalutamide in the river Rhine, orange: Bad Honnef Rhine-km 640, blau: Bimmen Rhine-km 865

Further procedure:

Phenylbenzimidazolesulfonic acid is ubiquitous and consistently occurs at comparable concentrations between 0.2 and 1 µg/L. It regularly exceeds the precautionary value of 0.1 µg/L. It is not included in the regular monitoring, because by further measurements, no gain in knowledge is expected.

May 2020