

General comments

The authors describe a strategy to identify sources of biocides and transformation products in an urban area. Analysis of transformation products in addition to original biocides completed information on environmental impact of constructions, but also indicated former use of substances that were not detected in the samples.

The described study expands knowledge on the distribution of biocides and transformation products in urban areas, which is urgently required in order to develop strategies to minimize emissions into the environment.

Related work is comprehensively considered, and own contributions are clearly indicated. Title and abstract reflect the content of the paper. The overall presentation is well structured, clear and descriptively illustrated by figures on the investigation area. The conclusions are supported by the obtained results.

The paper is recommended for publication in HESS with minor revisions.

Specific comments

- Line 48 Bollman et al. 2016 and 2017 b report on transformation of terbutryn and OIT on facades, please add these references here
- Line 50 231 days: this value was a result of Bollmann et al. 2017a
- Line 57 There are numerous papers that report on transformation products of diuron, terbutryn and OIT. This statement could be related to façade coatings to avoid a long list of references. However, the papers of Bollmann et al. 2016 and 2017b should be cited here at least. It may also be important that modern investigations on degradation products of diuron is usually limited to diuron-desmethyl although there are reports on a number of other transformation products (e.g. Jirkovský et al.: Photolysis of Diuron. Pesticide Science 50/1 (1997) 42-52 and other reports, see also Hensen et al. 2020). Possibly, other degradation products of diuron have been overlooked (not only in this study).
- Line 69 Biocides and their TP's can enter the environment only in case of driving rain to the surface (not generally during rain events).
- Line 70 Please explain how the elution experiments were performed on roof materials from house 4 – especially in case of horizontal orientation.
- Line 196 Please add information on the recovery of the SPE procedure for the analytes.
- Line 230 Estimation of net BE: The estimation of net biocide emissions according the given formula cannot be correct. Several reasons why this is incorrect are discussed later in the text (Line 349). Please change wording under 2.5 to clarify that this calculation is a rough estimate with certain reservations.
- Line 255 Differences in substance patterns are probably also caused by different intensity of UV radiation.
- Line 277 Different patterns of transformation products depending on different pigments were observed by Urbanczyk et al. 2019 (Influence of pigments on phototransformation of biocides in paints. Journal of Hazardous Materials 364 (2019) 125-133).
- Line 435 Missing biocides in the samples is not necessarily explained by former wash-off. Water solubility of most transformation products is probably higher than water solubility of the biocides. Therefore, the TP's should be washed off easier than the biocides. Probably, biocides that were available on the surface were almost completely transformed. It cannot be excluded, that biocides are still present in deeper layers of the materials that were not reached during the very short elution experiment.

Line 444 For environmental risk assessments it is urgently required whether PNEC values are occasionally or permanently exceeded. The data for the swale indicate that the PNEC values for diuron and terbutryn were exceeded in one out of four samples from the swale. Please clarify this statement.

Technical corrections

Title please add a blank between '2' and 'ha'

Line 14 use capital letters for Central and Northern Europe (also in the following text)

Line 64 please delete either 'and' or 'but'

Line 95 Please check the number of samples (52). The number of samples described in Table 1 amounts to 49. 3 samples from artificial experiments on facades and 20 samples from artificial experiments on roof materials from house 4 and x samples from a leaching test on the wooden terrace are mentioned in the text.

Possibly, the origin of the samples can be mentioned here (collected in the swale, rain downpipes and drainage pipe; from elution experiments on facades and roof materials from house 4 and a leaching test on the wooden terrace).

Line 97 please correct: 'selected'

Figure 1 please correct: Step 2 – Part 1 Identify source areas (instead of 'sources')

Method: the phrase 'elution experiments at selected infrastructures' would facilitate understanding the different methods mentioned here

Table 1 The information '(Duplicates >1)' seems to be unnecessary and rather confusing.

Line 246 please add a blank between 'below' and '4'

Line 250 please add 'in samples' after 'desmethyl'

Line 253 please delete 'detect'

Line 432 please correct: 'systems'

Line 500 please add a link

Line 510 please add a link