

Science for Environment Policy

Water run-off is key to measuring the release of biocides from treated construction materials

Weathering of treated wood and other construction materials can lead to the release of chemicals into the environment. Researchers have investigated the release of biocides from wood and roof paints, demonstrating that the amount of water in contact with exposed surfaces is a key factor in determining the level of active chemicals released. The study provides guidance for testing biocidal products in line with the European Biocidal Products Regulation.

Biocidal products, such as disinfectants, fungicides or insecticides, are chemicals used to control harmful organisms. Biocidal products can also be used to clean building surfaces and can be present in preservatives which are added to a variety of manmade surfaces, such as bitumen membranes on roofs or coated facades on buildings. This can lead to the release of chemicals into [watersheds](#) as 'run-off'. The use of biocidal products is therefore regulated by the [European Biocidal Products Regulation](#) (BPR)¹. The BPR limits the use and marketing of biocidal products if they are likely to cause risks to the environment.

However, restrictions depend on reliable information about the likely release of biocides into environment — which is not always available. For example, rainwater can cause leaching (the draining of chemicals from a material via water infiltration) of biocide products. This study investigated leaching of treated materials in both laboratory and field conditions in order to develop suitable test methods and inform guidance into the approval of biocidal products under the BPR.

The main observations of the study come from outdoor tests carried out on three different paints, which differed in their combinations and concentrations of active ingredients, and a textile impregnated with a protective substance, which also contains a biocide. Two of the paints (A and B) were wood paints applied to plywood boards. One paint (paint C) was a roof paint and was applied to fibre cement boards. Each material was exposed to natural weathering at one, two or three of three different outdoor locations and also under laboratory conditions. The roof paint (paint C) and the impregnated textile were tested both horizontally and vertically, as rainwater contact differs depending on the positioning of materials. Four active biocidal substances from fungicides, algicides or bactericides in the paints (diuron, OIT and terbutryn from the paint-treated wood and cement boards, and carbendazim from the textile) were measured in run-off samples to examine the extent of leaching from the materials.

The study demonstrated that weathering leads to leaching of active substances at variable rates. Environmental factors, such as temperature, influence the release of biocides. This is because they affect the transport, amount of degradation and evaporation of chemicals within the materials. Leaching rates also decrease the longer materials are exposed to weathering and sunlight as active substances break down over time.

Continued on next page.



22 July 2016

Issue 464

[Subscribe](#) to free
weekly News Alert

Source: Schoknecht, U., Mathies, H. & Wegner, R. (2016). Biocide leaching during field experiments on treated articles.

Environmental Sciences Europe, 28: 6.

DOI:10.1186/s12302-016-0074-9. This study is free to view at:

<http://enveurope.springeropen.com/articles/10.1186/s12302-016-0074-9>.

Contact:

ute.schoknecht@bam.de

Read more about:

[Chemicals](#), [Urban environment](#), [Waste](#), [Water](#)

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this

article/service: "Science for Environment Policy":

European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

1. EU Biocidal Products Regulation 528/2012 (EU BPR):

<http://echa.europa.eu/regulations/biocidal-products-regulation>

Science for Environment Policy

Water run-off is key to measuring the release of biocides from treated construction materials (continued)

22 July 2016

Issue 464

[Subscribe](#) to free
weekly News Alert

Source: Schoknecht, U., Mathies, H. & Wegner, R. (2016) Biocide leaching during field experiments on treated articles.

Environmental Sciences Europe. 28: 6.

DOI:10.1186/s12302-016-0074-9. This study is free to view at:

<http://enveurope.springeropen.com/articles/10.1186/s12302-016-0074-9>.

Contact:

ute.schoknecht@bam.de

Read more about:
[Chemicals](#), [Urban environment](#), [Waste](#), [Water](#)

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this

article/service: "Science for Environment Policy":

European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

The experiments revealed that the amount of water in contact with a material's surfaces and the amount of run-off were key factors in the leaching of biocides. For the paints and textile, the leached amounts per surface area, and therefore total substance emissions, were higher from horizontal surfaces, as they are exposed to greater amounts of rainwater compared to vertical surfaces, which are only exposed to a part of rainfall. Although the total amount of active substances in run-off from vertical surfaces were lower, concentrations of the active substances were higher, as the leached substances are less diluted by rainwater. Leaching was also greater from sporadic water contact under laboratory conditions compared to weathering of vertical surfaces outside.

The test procedures used in this study are based on those developed by the [Nordic Innovation Centre](#) for preservative treated timber. The researchers extended these procedures to materials containing other biocidal products resulting in a guidance document² for testing biocidal products. This guidance has been adopted by European authorities such as Germany's [Federal Environment Agency](#) (UBA) and could also help fulfil the requirements of the Biocidal Products Regulation for other countries.



2. Guidance on a semi-field test method for materials that are treated with biocides.
http://echa.europa.eu/documents/10162/20733977/env_26_semi_field_leaching_test_en.pdf