Summary INTRON report

ZINC IN DRAINAGE WATER UNDER ARTIFICIAL TURF FIELDS WITH SBR

Measurements from 2008

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SUMMARY

On completion of the previous study[1], the VACO (Tyre & Wheel Trade Association) and Vereniging Band en Milieu (Tyre & Environment Association) gave an undertaking to the Ministry of Housing, Spatial Planning and the Environment (VROM) to continue monitoring the leaching of zinc under artificial turf fields.

The further research was carried out by INTRON of Sittard in consultation with VROM and the National Institute for Public Health and the Environment (RIVM), and was commissioned by Vereniging Band & Milieu / RecyBEM and Vereniging VACO (Tyre and Wheel Trade Association).

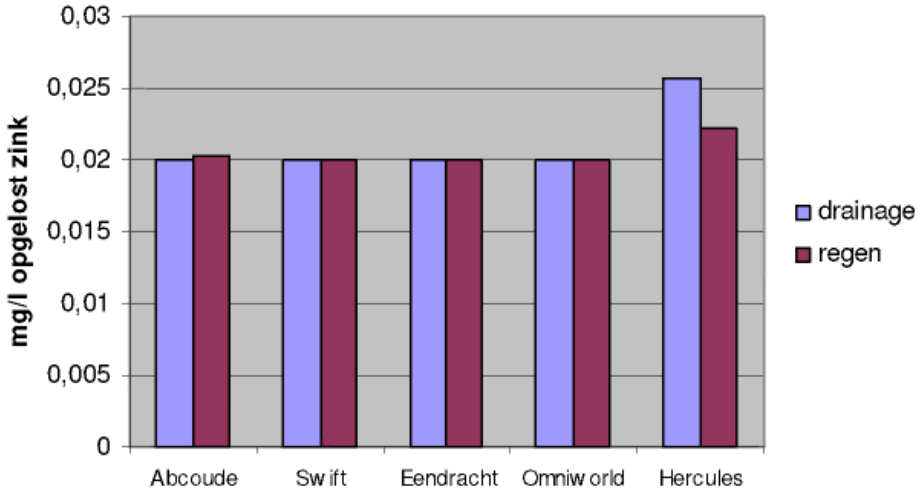
This report presents the results of new monitoring in 2008. The oldest monitored fields are now 7 years old.
The results for zinc levels in drainage water correspond to the data from the previous study. There has been no increase in zinc concentration in drainage water, either in relation to the previous year or in relation to rainwater quality.

The low concentration of zinc measured in the drainage water from the fields is consistent with the leaching calculated for an artificial turf system, including underlays, on the basis of laboratory tests.

[1] INTRON report A924220/R20070368, Follow-up Study of the Environmental Aspects of Rubber Infill

4. DISCUSSION AND CONCLUSION

The concentrations shown in Figure 2 are an average, for each field, of the concentrations of dissolved zinc measured in the 5 measurement periods.



mg/l opgelost zink = mg/l dissolved zinc
regen = rain

Figure 2. Concentration of dissolved zinc in drainage water and rainwater.

The research shows that the concentration of zinc is low, both in the drainage water and rainwater. There is no systematic difference in the concentration of zinc in rainwater and the concentration of zinc in the drainage water. The average concentration of dissolved zinc in the drainage water from the five fields is [Zn] = 0.015 mg/l using a correction factor of 0.7 for the values of the detection limit. Last year, the concentration of zinc in the drainage water from the five fields was [Zn] = 0.016 mg/l. In relation to last year (2007), the concentration of zinc in the drainage water has decreased.

The concentration of zinc in the rainwater is now slightly lower than last year. This is probably due to the fact that the rainwater is measured including the dry/dust deposition and the soluble zinc it contains. Rainfall was higher than the previous year, which means that the relative proportion of zinc from dust was lower, and hence the zinc concentration in the rainwater was lower. INTRON's own observations with regard to the amount of water collected in the containers are consistent with the precipitation measured by the Royal Netherlands Meteorological Institute (KNMI) in the autumn of 2008 in comparison to 2007.

On the basis of the new observations, we conclude that, after 7 years of use, zinc does not penetrate the underlays. This is consistent with the laboratory tests, in which it was calculated that zinc leaching will not occur until a period of 230 to 1800 years has elapsed[2]. It can also be concluded that the concentrations of zinc in the drainage water are not significantly higher than the concentrations in the rainwater. After 7 years, there is no evidence that the use of rubber infill poses a risk in terms of the leaching of zinc.

[2] INTRON report A845090/R20090029