

# New research might prevent asphalt damage

June 5 2007

---

Repairing asphalt damage caused by water infiltration costs a great deal of money and produces extra traffic delays. Yet within the asphalt industry there is little insight into the fundamental processes leading to water damage. Delft PhD candidate Niki Kringos is about to change this, by modelling the damaging influence of water and traffic on asphalt. In her research she applied her model particularly to American asphalt mixtures.

Water damage to asphalt is a major expense. It also results in an increase in traffic delays because roads often have to be closed during repair work. This applies even more to the Netherlands, where extremely open asphalt concrete (ZOAB in its Dutch acronym) is used. ZOAB has to be repaired once every six to nine years. According to Delft PhD candidate Niki Kringos it is better to prevent asphalt damage than to simply keep repairing it.

Asphalt suffers damage through the combination of infiltrating water and the ongoing burden of moving vehicles. It appears clear from the damage to the road surfaces that water has a negative effect on the material properties of the asphalt components and their binding.

Kringos succeeded in using her own computer program to model the deterioration in asphalt arising from the combined action of water infiltration and mechanical load. From the simulations it appears to be vitally important to measure the variables important for water damage, for all the individual asphalt components. These variables include the maximum moisture retentiveness, the moisture diffusion and the binding

strength of the various asphalt components. Differences here appear to have an enormous influence on the degree of asphalt damage.

Kringos' program can make a significant contribution to developing an improved and structured material selection which should lead to asphalt types which can last longer. In her research she applied her model particularly to American asphalt mixtures, and is currently busy adapting her results to the Dutch situation.

Source: Delft University of Technology

Citation: New research might prevent asphalt damage (2007, June 5) retrieved 11 May 2024 from <https://phys.org/news/2007-06-asphalt.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.