# Reduction of tyre abrasion and CO<sub>2</sub> through the use of geotextiles

#### **Calculation Example**

The Surface Sealing of Landfills

The transport of material for a fictitious landfill sealing project is compared. Comparisons are made between a geotextile bentonite mat liner project and a clay liner project.



**4,500 m²** Landfill area



#### The construction methods

in comparison



4,500 m<sup>2</sup> of bentonite mats

1 trip

semi-trailer truck 4-axle **25,000 kg** capacity/trip



2,250 m<sup>3</sup> clay mineral

corresponds to waterproofing

### 203 trips

Payload dump truck 4-axle **20,000 kg** capacity/trip





**557 kg CO**<sub>2</sub>

1 truck, transport distance 600 km CO<sub>2</sub> emissions per km 0.928 kg/km



## 9,391 kg CO<sub>2</sub>

**203 truck**, transport distance **50 km** CO<sub>2</sub> emissions per km **0.928 kg/km** 





Result:

A comparison of the two solutions clearly shows that a landfill using geotextiles produces up to 96% less microplastic from tyre abrasion (under the parameters listed above) than the expansion variant with a clay liner.

In addition, 94% more CO<sub>2</sub> is produced during the transport of the clay mineral. Added to this, is the additional CO<sub>2</sub> caused by the use of machinery during paving, which is considerably lower with the geosynthetic option. In addition, the construction costs are usually lower when using a geotextile solution.





