PERVIOUS CONCRETE COULD REDUCE TOXICITY IN URBAN RUN-OFFS

BY JAN DE BEER

With a very wet summer predicted for many parts of South Africa, increased use of pervious concrete and concrete block paving in urban roads and parking areas could play a major role in reducing toxicity in the country's water resources, says Bryan Perrie, CEO of Cement and Concrete SA (CCSA).

"Pervious concrete ground surfaces allow rain, municipal and domestic gardening water, and other water to percolate through to replenish natural aquifers. Run-off from impervious surfaces, such as asphalt, sends grease and other harmful chemical products into surrounding rivers, streams and dams while pervious concrete paving naturally filters out pollutants," Perrie explains.

He says the dangers of toxic elements forming part of flooding run-off have been shown in KZN on more than one occasion with several beaches again closed this month because of dangerous discharge and spillage from inland waters into the ocean. Although not new - it was first used in the 19th Century - pervious concrete is now globally receiving renewed interest because of intensified clean water legislation in many countries.

"It has attracted a descriptive advertising slogan: 'when it rains, it drains'. That is, in fact, what happens. As water soaks through the sub-base of pervious concrete surfaces, natural filtration takes place which removes pollutants and impurities from the water. Permeable paving can also, to a certain extent, prevent flash flooding by absorbing water rather than moving it into drainage or allowing it to build up on top of the surface."

Perrie says, with municipal budgets now extremely limited, pervious concrete or permeable block paving can be used for storm water attenuation to replace retention ponds.

This can reduce the number and size of drainage infrastructure elements, saving both materials and energy, as well reducing future maintenance.
Among the major benefits of permeable concrete pavements include natural drainage of standing water and puddles which are difficult to prevent on a large, flat surface areas. It also increases the safety of pedestrians because it dries rapidly.

"The storm water infiltrating through the ground provides higher moisture content. Moreover, the voids of the pervious concrete allow the necessary air for roots to breathe and grow into trees and plants. In low rainfall areas, pervious concrete can consequently increase the groundwater table."
Although not strong enough for heavy-traffic pavements, pervious concrete has been successfully used for low-volume roads, driveways, sidewalks, golf cart paths, retaining walls, slope protection, and as French drains. The proper utilisation of pervious concrete is a recognised Best Management Practice by the U.S. Environmental Protection Agency (EPA) for providing first-flush pollution control and storm water management, Perrie adds.