TEXT and **IMAGES**: Esa Tuominen

What if gritting sand could be treated with a substance that prevents it from generating dust before it is collected?

DUST CONTROL BENEFITS PUBLIC HEALTH

The past winter was record-breaking mild in many parts of Finland.

However, ice accumulated once again on roads, streets and sidewalks, and, as before, they were gritted to keep them passable.

While it may well be that less sand was used over the past winter than before, road dust will still be stirred into the air again this spring. Road dust can irritate allergy sufferers and feeling that 'crunch' when you get dust in your mouth is something that everyone in Finland can relate to in the spring.

So, what should we do then since not gritting the roads will result in concussions, broken bones and fender benders?

Road dust is harmful to health

In Finland, spring is the season of road dust, which is not only annoying, but also harmful to health. The main components of road dust are sand and finely ground asphalt. In addition, it also contains a small amount of soot particles and car tyre particles.

Pollen season and the highest road dust concentrations usually occur at the same time, which makes life even more difficult for those with allergies. At the same time, the warmer weather means that many people keep their windows open, unintentionally inviting dust into their homes. Fly screens will keep insects out, but not dust.

No matter how quickly authorities and property managers try to remove sand from the streets and sidewalks, road dust cannot be avoided in the spring. The area to be cleaned is so vast that even with a large fleet of street sweepers, the dust will irritate pedestrians and other road users for weeks.

In buildings, road dust and pollen can be prevented from getting indoors with high-performance supply air filters. Experts recommend replacing these filters twice a year in spring and autumn. It is also a good idea to not use equipment like leaf blowers to remove gritting sand.

Luckily, Timo Nissinen has developed a method for binding gritting sand so that it does not dust in the first place.

Dust can be bound to gritting sand

Timo Nissinen, Master of Science (Technology) in chemistry, is familiar with the problems caused by road dust.

While working at Kemira, he developed different methods for binding road dust. When Kemira decided to focus on the chemistry of water treatment technologies and the pulp and paper industry, Nissinen decided that his time had come.

”Seven years ago, I started my own business and started to explore what compounds could most effectively bind to road dust before it is removed.

Nissinen’s company Kemion Oy is located in Ylöjärvi near the border between Ylöjärvi and Tampere. In the small industrial area, Kemion Oy has neighbours such as Aku’s Factory, which is helmed by and named after a member of the Finnish rock band Eppu Normaali.

After a lengthy R&D process, Kemion launched the Eco-Binder range of products for road dust control. As the name suggests, the products of the Eco-Binder range bind to dust ecologically.

The products are biodegradable, making them suitable for use in groundwater areas.

The products are broken down into carbon dioxide and water by bacteria naturally found in the soil.

Cold spells cause problems

The problem with gritting sand removal in the spring is that as long as the temperature drops below zero during the nights,

the removal cannot be started. Roads become slippery if they are treated with water and the temperature drops below freezing in the night.

”Our products differ from pure water in that the sand treated with our products can be removed even at below zero temperature. Our most used product can be used at temperatures of up to -50 °C, but it can be diluted to withstand temperatures between -10 and -15 °C, which makes it suitable for use in springtime in Finland.” Nissinen points out that when water evaporates, the sand becomes dry and dusty again. When gritting sand is treated with a product specifically developed to bind to it, it can be removed without generating dust even days after the treatment. The substance is hygroscopic, which means that it retains moisture even in sunny spring weather. Road dust is not only generated by gritting sand, but also by gravel pitches, playgrounds and unpaved roads. These, too, can be treated with the biodegradable product to prevent dust generation.

Timo Nissinen’s Kemion Oy markets a product claimed to prevent dust generation.