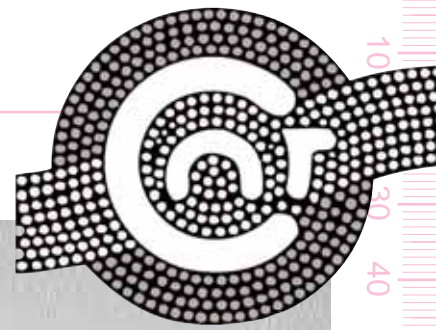


BUSH TECH #14

Dust control



A COMMON SOURCE OF DUST IN REMOTE AUSTRALIA. PHOTO: ALISON ALDER

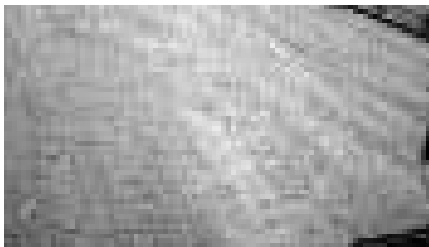
Why control dust

Dust from unsealed roads and other community areas can affect health and increase the wear and tear on vehicles and equipment. Many Environmental Health Officers, clinic doctors and nurses say that dust contributes to many of the problems that bring community residents to visit the clinic. Dust carries pathogens from bird, dog and other animal faeces, and many other contaminants. The health issues are often respiratory/chest infections, eye problems and skin disease.

Controlling dust

There are some relatively simple ways of controlling dust.

- Traffic control – use borders such as kerbing, bunds, trees, rocks, and fences to keep vehicle traffic from travelling off the main roads or around houses.
- Plant trees, shrubs, native gardens (low water users) around areas that have no need for traffic.
- Keep cattle and horses out of community housing areas by using good stock-proof fencing.
- Use appropriate road construction and maintenance methods (without chemicals); select local materials with a wearing coarse capacity, arrange compaction to provide a hard surface layer, build a formed, crowned cross-section and add good drainage.¹



There are more expensive ways of controlling dust:

- Regular watering of roads and surrounding areas
- Using one of the assortment of dust control agents that can be laid on the surface of the road, or mixed within the formation of the road
- Bitumen or hot mix seal.

Dust control products

There are many types of products available:

- Chloride based products (salts) like magnesium chloride, which absorb moisture during the night
- Chemicals that bond with soil through an electrochemical process, holding the soil particles together
- Bi-products of timber processing that bond with soil, holding the soil particles together
- Organic binders (including natural products from ants and worms)
- Products that seal the surface of soil (bitumen, hot mix)
- Other soil stabilising products like cement and lime that hold the soil particles together.

Which is the best form of dust control?

For more than four years, Transport South Australia has been conducting extensive research using electronic equipment to measure dust fallout, on-site observers to record and photograph what they see, and feedback from road users. The Western Australian Government's Main Roads Department and several mining companies also have carried out extensive tests on dust control methods and products.



BUSH TECH #14

Dust control (continued)



TEST SITE FOR DUST CONTROL PRODUCTS IN THE KIMBERLEY.

On the information currently available, this writer believes that in the long term, road seals (bitumen, hot mix) are the most cost effective method. Bitumen is typically designed for a life span of 20 year to 40 years.

In the short term, there are a variety of products that are satisfactory. These vary in price and application methods but normally require re-application within 12 months.

The following information gives some insight into the preparation required, and the short term and long term effectiveness of the different forms of dust control.

Soil bonding products (not seal)

- The level of preparation and earthworks required for soil bonding products is similar to that for sealing a road with bitumen; that is cutting/scarifying, spreading, forming/sheeting with a crowned cross section, mixing/grading, watering and rolling.
- Each section of road, or section of a certain natural soil base, requires soil sampling to check its compatibility with the dust control product being used (tests such as pH level, plasticity and optimum moisture content).

- Most products reduce dust significantly for at least 12 months before re-application is required.
- Some products tested so far last up to two years before re-application.
- Some products are toxic in their undiluted state and are dangerous to handle on site without proper protection.
- In the 1996 Transport SA tests, products cost between \$3,000 and \$10,000 to cover a lineal metre (not including the earthworks).
- These products eroded throughout the local seasons (rain, wind, sun), and/or through normal traffic and planned maintenance grading.
- Other tests and research carried out found that "The expectation by users, of the period of effectiveness of dust suppressants, was approximately double that actually achieved".²

Reference

1 & 2 Foley G., Cropley S. and Giummarra G. 1996 Road Dust Control Techniques – Evaluation of Chemical Dust Suppressants' Performance ARRB Transport Research, Special Report 54.

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