

J. van Denzen *De reductie van stofemissie bij de op-en overslag van stortgoederen.*
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The handling of bulk material is inevitably accompanied by dust, which when spread by the wind, can be hazardous to health and a nuisance to the surrounding environment. Modern society is becoming increasingly intolerant for companies that cause this form of environmental damage.

At Ertsoverslagbedrijf Europoort CV (EECV), at the port of Rotterdam, this form of dust pollution is a problem during the various handling processes, and the company is under increasing governmental pressure to find solutions. Three simple steps constitute the problem:

1. Initial cause of disturbance.
2. Dilation of the primary dust cloud.
3. Airborne dissemination.

The solution lies with the prevention of the first stage. In this initial stage five physical actions are distinguished:

- Wind erosion
- Spillage of projected stream
- Air flow caused by moving bodies
- Impact of falling stream
- Impact of machinery.

By addressing each of these factors, significant improvements can be made.

Emission sources specific to EECV can be noted as:

- Hopper filling.
- Outdoor stockpiles.
- Airborne disturbance by local traffic.
- Disturbance during transfer by conveyor belts.

These four primary causes of dust pollution are the main focus of this study towards the reduction of the problem.

The transfer of material can be dealt with in three ways:

1. Specifically designed wind shields around hopper.
2. Fine mist sprays to dampen dust clouds in skip containers when the material is unloaded.
3. Shielding to contain dust clouds in skip containers when material is unloaded.

In dealing with stockpiled loose materials, one of two procedures is required:

1. Mist sprays above stockpiles to create a fine outer shell.
2. Stabilising outer shell with specific binding agent.

These two solutions are similar and further cost evaluation studies are therefore required.

Disturbances caused by local traffic on paved roads, can be dealt with by road cleaning, with further studies being required to again establish the most cost effective approach. The disturbances caused by traffic on the unpaved road can be dealt with by dampening the road surface (permanent sprays being more cost effective than mobile units), and the use of binding agents.

Disturbance at contact between the empty, dirty sides of the conveyor belts and roller equipment require similar solutions, in the form of:

1. Water damping of the contact equipment.
2. Specially designed screens.

With the solution that require water as a damping agent, one must consider also the problems concerned with temperature variations such as freezing conditions.

In addition to physical engineering solutions, one must also consider the more subtle approaches, such as reduction of local traffic speeds, and the training of crane staff, to ensure maximum care in the handling of loose materials.

Finally, when designating new working practices, it is important to detail specific areas of responsibility, to ensure that staff members are aware of their role in effecting improvements, and that they are trained to deal with new procedures.

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