

Moisture Control in Fertilizer Storage

Moisture is a major menace for the fertilizer industry. Most commercial fertilizers especially, those that have a high concentration of nutrients, are hygroscopic and thus have a high solubility in water. So they readily absorb water vapour or moisture during production, storage and bagging and form a saturated solution leading to caking, oozing, lumping. The end result is often qualitative and quantitative loss.

Effects of Uncontrolled humidity

Fertilizer being highly hygroscopic absorbs moisture from the surrounding air during storage. This leads to the following problems:

- Caking and Lumping
- Loss of fertilizers free flowing property
- Loss of physical, nutrient and chemical properties
- Loss of Strength
- Crystallization
- Danger of explosion of Nitrate based Fertilizers
- Health Hazards due to ammonical fumes of decomposed hygroscopic fertilizers
- Slippery floors due to hardening of the fertilizer on the floor of the warehouse

**Causes of Uncontrolled humidity**

- Longer period of fertilizer storage
- Hygroscopic in nature and highly soluble in water, especially if there is a high concentration of nutrients
- In the bagging area, when the fertilizer taken out of silos for bagging, is very hot and becomes extremely hygroscopic

General Recommendation

The relative humidity in the Fertilizer Storage Area should be maintained at $35 \pm 5\%$ at about 27°C .

Bry-Air Solution

To overcome the problems arising out of hygroscopic nature of fertilizers, it is necessary to condition the air inside the warehouse and storage sites so that the fertiliser do not absorb moisture from the atmosphere. Bry-Air Dehumidifiers maintain these conditions with ease irrespective of ambient temperature.

Dehumidification is essential/ critical in the following areas:

- The prilling tower – low humidity improves the prills
- Bulk Storage – to protect the prills, etc.
- Bagging operations – for the ease in handling of prills, etc.

SPartial Reference List

- Madras Fertilizers Limited, India
- KRIBHCO, Surat, India