

# VIBRA SCREW CASE HISTORY



C-213

## Water Treatment at Agrico Expedited by Bin Activators

### Customer

Agrico Chemical Company, Donaldsonville, La. Producers of fertilizers, primarily of the ammonium phosphate types.

### Problem

In its water treatment process, Agrico requires the storage of both pebble lime and calcium carbonate in the form of finely ground limestone. Bulk density of these materials is, respectively, 60 and 100 lbs. per cu. ft. They are stored side by side in two skirted silos, each 30 ft. in diameter by 30 ft. high, straight wall, carbon steel construction. The silos each have a capacity of about 600 tons. From one silo, lime goes to weigh belt feeders which in turn feed lime slakers for water treating. From the other, calcium carbonate goes to a weigh belt feeder, then it is slurried and moved by a jet ejector into the tank where the water treatment process is carried out. In the first step of the reaction, the pH is raised with calcium carbonate from 1 to about 2 or 3, which removes the fluorides. In the next step, the slaked lime is used to raise the pH to about 8.5 to 9, removing the phosphates. Both lime and limestone are well-known as problems to handle. Lime tends to cake up in the presence of moisture. Calcium carbonate is even more difficult — it compacts almost like cement, has high shear strength and ratholes badly. The company needed a steady flow of both materials to achieve its production goals.

### Solution

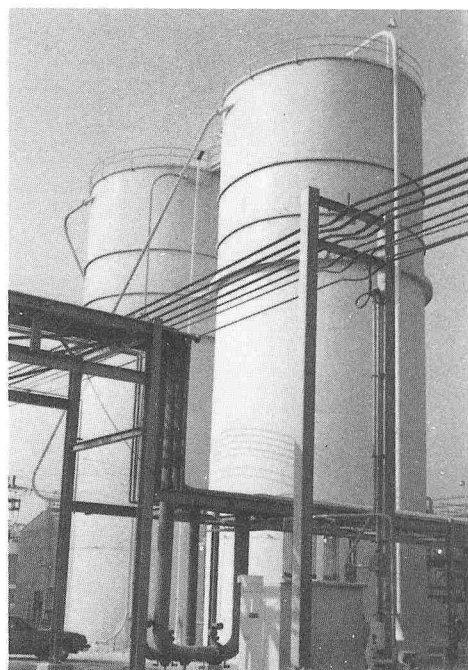
2 Vibra Screw Bin Activators, 12 ft. diameter, carbon steel construction, preassembled mounting rings.

Agrico had several years of previous experience with Vibra Screw Bin Activators in moving phosphate rock and pebble lime from storage, and it was highly satisfactory. Employing pre-assembled mounting rings, they installed Bin Activators on both silos. The Bin Activators are patented vibrating dischargers which are flexibly mounted to the bottom of the silos. Controlled vibration is provided by an oil-lubricated gyrator mounted on the Bin Activator. The gyrator causes the Bin Activator and its contents — but not the bin — to be vigorously vibrated. An internal baffle, directly above the outlet, relieves the headload and directs vibrations vertically up into the material in the bin, keeping it free-flowing and

eliminating ratholing and plugging.

### Results

Agrico achieves steady flow of both lime and calcium carbonate with the aid of its Bin Activators. Maintenance is minimal and energy requirements are low. The Bin Activators permit handling of 16 tons per hour of lime and up to 27 tons per hour of calcium carbonate.



Agrico achieves a steady flow from its lime and calcium carbonate silos with the aid of Vibra Screw Bin Activators.



The Bin Activator is a patented vibrating discharger which is flexibly mounted to the bottom of a silo. Its maintenance requirements are minimal and energy requirements low.