It is a more or less common practice among fertilizer manufacturers to mix fresh superphosphate with ammonium sulfate and let the mixture cure in storage. Some heat is generated by the mixing and the mass later sets or hardens during the curing process. The cured mixture is reground before mixing with other ingredients to make a finished complete fertilizer. This method of handling ammonium sulfate and superphosphate is known in the trade as "basing" and the product as "based" ammonium sulfate.

The generation of heat during "basing" is taken by some as evidence of a chemical reaction, and it is assumed that the following metathetical reaction occurs (stated simply): \((\text{NH}_4)_2\text{SO}_4 + \text{CaH}_4(\text{PO}_4)_2 \rightarrow 2 \text{NH}_4\text{H}_2\text{PO}_4 + \text{CaSO}_4\).

The reaction no doubt occurs to a limited extent, but how far it goes under the conditions of the factory has not been determined. It is of the reversible type and therefore cannot be expected to go to completion in the fertilizer mixture.

The fertilizer manufacturer has found the "basing" process to be good factory practice and it has been thought that a superior form of plant food is formed in the process; the latter on account of the assumed presence of ammonium phosphate. A number of experiments have been reported which show that ammonium phosphate is a satisfactory carrier of nutrient nitrogen and phosphorus, if used under certain optimum soil conditions. Unfortunately, the soil conditions existing in many of the experiments have not been determined or reported. Some have assumed that ammonium phosphate is superior to ammonium sulfate under strongly acid soil conditions, but that there is no advantage for ammonium phosphate under slightly acid or neutral conditions.

Theoretically, the ultimate effect on the soil of "based" ammonium sulfate as compared with unmixed ammonium sulfate plus superphosphate should be the same, regardless of chemical changes that may occur in the "basing" process; for the chemical reaction is undoubtedly a reversible one, and when the "based" mixture is added to the soil the presence of moisture would tend to induce the same equilibrium that existed before "basing" occurred.

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