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Expert Group Meeting on Minimizing
Pollution from Fertilizer Plants
Helsinki, Finland, 26 - 31 August 1974

POLLUTION ABATEMENT IN A UREA PLANT^{1/}

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Summary

Major pollutants from a urea plant are ammonia and urea. If those pollutants are caught and recycled back to the process in efficient manner, then the emission of pollutants to atmosphere and drainage can be reduced with additional merits that the raw material consumption, especially ammonia consumption per ton of product urea, will be improved at the expense of slight increase of utilities consumption.

Based on the above philosophy, various pollution control systems have been developed and tested by us and incorporated into the existing plants design, meeting the recent requirements for environmental protection.


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Urea dust contained in the effluent from the prilling tower has been a major concern of air pollution in a urea plant. The most difficult point to handle this pollution problem is that very fine dust of urea is carried in a huge amount of hot air through the prilling tower which is about 400,000 - 500,000 Nm³/hr for a 1,000 MTPD urea plant. The newly developed dedusting system by us, wet scrubbing method in principle, now reduces urea dust content to less than 30 mg/m³ effluent air.

In urea synthesis, one molecule of water is formed to one molecule of urea, which is to be separated in a crystallizer or evaporator together with the water used as absorbent in a recovery section. The above separated water usually entrains very small amount of urea mist, ammonia and carbon dioxide, which has been a major concern of water pollution in a urea plant. By utilizing the condensate of the above separated water into the above mentioned dedusting system, total pollution problems in a urea plant are now solved in a very efficient manner.





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