PRODUCTION OF SULFURIC ACID (H$_2$SO$_4$) (2,700 TON/YEAR)

Project Design Research
Submitted to Faculty of Engineering / Chemical Engineering Department in Partial of Fulfillment of the Requirements for the Degree of Bachelor of Chemical Engineering

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Conclusions

The case study of the manufacture of sulfuric acid emphasizes the benefits of a systematic design based on the analysis of the reactor/absorber. The core of the process is the chemical reactor, and in which the reaction is take place (convert sulfur dioxide to sulfur trioxide) on a vanadium oxide V_2O_5 as a catalyst, as well as the safety and technological constraints. In this process "Accidental pollution" there is always a risk of accidental pollution when chemicals are produced and handled.

The more common a chemical, the more information is available about the different hazards and the lower the risk of accidental pollution. The highest risk for accidental pollution is during the transportation of the product. There is also a risk of pollution from the storage of sulfuric acid and different plants have different systems to collect leaks and spillages depending on guidelines for the storage of acid. Gas leaks are not normally a problem as they are handled by various monitoring and control systems, which measure the SO_2 content in the air.

Figure 1. 4 contact process

1.5 The comparison between lead chamber and contact processes

Table 1. 3 The comparison between lead chamber and contact processes

Lead chamber process	Contact process
Lead chamber process is the older method of producing sulfuric acid	Contact process is the modern method of producing sulfuric acid
Nitrogen dioxide	Vanadium pentoxide
More expensive	Less expensive
Low concentration	High concentration
More time consuming	Less time consuming