



Al Qawafel Agro-Industrial Company

Al Qawafel Agro-Industrial is a Jordanian company established in 1990. It is one of the largest fertilizer companies in Jordan specialized in producing compound fertilizers, chelating agents of micronutrients (Al-makhlabh) and organic pesticides.

Number of Employees	150 - 170
Key Products	Compound fertilizers, chelating agents of micronutrients and organic pesticides
Main Market	Main domestic markets: Farmers in Jordan. Main export market: 80% of the production is exported to different countries such as Egypt, Algeria, Sudan, Lebanon, Iran and Saudi Arabia



Al Arabia Company was also established in 1990 and is part of the Al Qawafel Agro-Industrial Company. The company produces potassium sulfate (K_2SO_4), which is supplied as raw material to Al Qawafel for the production of compound fertilizers. The company also sells their produced potassium sulfate directly to farmers.

The Company participated in the project '**Applying Eco-innovative Strategies for Chemical Risk Reduction in Jordanian Industry**', supported financially by the SAICM Quick Start Project, with technical support from the United Nations Environment Programme, and the Cleaner Production Unit of the Royal Scientific Society.

Eco-innovation

Hazardous chemicals are unfortunately of common use in the production of raw materials for the manufacturing of agro-chemicals. They are also contained in by-products resulting from these processes. Producing potassium sulfate, a raw material in the production of fertilizers, poses high environmental impacts and health risks. Although Al Arabia decided to not make changes in the chemical substances used to produce potassium sulfate, the company acknowledged the urgent need to address the hazards and risks associated with the manufacturing of this raw material. Therefore, the company engaged in the Eco-innovation project and developed a new business strategy focused on becoming a recognized leader in Jordan and international markets such as Iraq, Saudi Arabia and Egypt; producing high quality and competitively priced potassium sulfate, and committed to soundly manage hazardous substances guided by environmentally sustainable production practices, and engaging with key partners and businesses.

As part of this strategy, Al Arabia targeted the sound management of 25 ton per day of liquid hydrochloric acid (HCl), a by-product of potassium sulfate production, which is stored on-site in plastic containers. Exposure to hydrochloric acid in the short term may cause irritation of the skin, eyes and mucous membranes; and the long term occupational exposure to this chemical may cause health issues such as chronic bronchitis, gastritis, dermatitis and respiratory tract irritation. At Al Arabia's facilities, the storage and handling conditions for hydrochloric acid pose health risks to staff members and the vapors released from the production also affect the surrounding communities in the perimeter of the facilities. And, from the financial point of view, the large quantities of hydrochloric acid produced daily react aggressively with the facilities (steel and concrete buildings), and thus can cause significant financial losses to the company. In order to address this issue, Al Arabia identified that the steel manufacturing industry uses hydrochloric acid, and thus the company started identifying potential new customers in this industry, where hydrochloric acid can be sold as a valuable material. Through reducing the amount of HCl

stored on site, the company targets reducing health risks faced by staff members who handle liquid HCl.

To reduce the large amounts of HCl obtained as by-product, Al Arabia uses it to produce liquid calcium chloride (CaCl_2) in large quantities of 7K-10K tonnes per year. CaCl_2 can cause skin irritation, and in extreme cases such as ingestion, it can lead to severe health effects such as burns in mouth and throat, stomach pain, respiratory issues and low blood pressure. There are market opportunities to sell calcium chloride, which were identified by Al Arabia, including its use in extraction processes, food industries, drilling, dairy products and plant nutrients. However, these industries use CaCl_2 in solid (flakes) state, but not as liquid. Therefore, the company has identified a technology provider to convert CaCl_2 from liquid to flakes, and is in the final stages to secure the technology.

By finding new markets where HCl and CaCl_2 in flakes can be used, Al Arabia not only expects to increase its profitability, but aims at improving the health conditions of their staff exposed to these chemicals; as well as reducing the air contamination caused by HCl vapors, and that use of calcium chloride can lead to potential high levels of chloride and heavy metal contamination.

“The company believes that reducing its impact on the environment, and adding value throughout its value chain and its stakeholders make good business sense”.

Eng. Ahmad Al Bis

General Manager, Al Qawafel/Al Arabia