# Project Summary

Aquaculture is an important business in many countries around the world, high density fish with less amount of land and water resources is the core of every person or company they look after aquaculture as business, but high density of fish with limited area cause rapidly degradation of pollutants in water as result of fish by products, these by product harmful to fish up to the point of death.

 The great importance given to the concentration of ammonia in the fish pond, after the proportion of soluble oxygen in the basin because high concentration has caused deterioration in water quality in aquarium which would require treatment in order to maintain a better aquaculture environmental and enhance its economic feasibility.

In spite of being fish aquariums don’t have enough interest in Palestine but there are some people who consider this type of work is of benefit. According to fish keeper, in comparison with other pets, fish need very little of our time and attention, it is important to keep the level of fish wastes in a low level by using filter but it cannot extract all waste materials that accumulate, when the water becomes cloudy or yellow, the best way to keep fish alive is to change water, every week quarter amount of water is removed and replaced by clean one in order keep the useful bacteria which converts ammonia to nitrite and nitrate. Recently many studies have developed to remove ammonia by using electrochemical cell. Ammonia test kits determine ammonia levels by comparing water sample mixed with pre measured reagents against color standards. Always measure pH and temperature when measuring ammonia, without these other measurements it will be difficult to evaluate the true value of ammonia sample.

 The efficiency of ammonia removal from aquarium by using electrochemical cell was investigated in this project using aluminum and stainless steel electrodes. The experiments were designed to study the effect of oxidizing agent, concentration of the solution, initial concentration of ammonia, current density input, and number of electrodes on removal of ammonia from aquarium.

The apparatus consisted of two pairs of anodes and cathodes electrodes situated approximately 5 cm apart to each other and dipped in the ammonia solution. The current and voltage measured by using ammeter and voltmeter respectively. The solution was prepared by dissolving ammonium sulphate (NH4)2SO4 in distilled water and increase the pH by using 1M NaOH to change all ammonium to liquid ammonia in the solution. The concentration of ammonia after and before treatment was measured by using test kit (Prodac Test Kit) and pH box because of their availability.

Current variation causes opposite trends, while an increase in current would increase the oxidizing efficiency of the system, the highest ammonia removal (95 %) was achieved at a current of 3 mA, the efficiency of removing ammonia was directly proportional to the quantities of oxidizing agent and 95 % of ammonia was removed using 10 ml of oxidizing agent. The efficiency was inversely proportional to the number of electrodes without using oxidizing agent and the highest removal achieved using five aluminum electrodes, volume of the solution didn’t have significant effect on removal, the percentage of ammonia removal was equal (95 %) for seven and five liter of solution.