The detailed study presented here has shown the effects of atmospheric streamer discharge plasma on undesired microorganisms in water like algae. Algae are water organisms classified separately from plants. They are known to cause many hazards to humans and the environment. Many factories and holiday places have problems with removing algae. This study presents data about pulse power discharge in the water with algae was presented. Algae were treated by high voltage pulsed discharge (using copper pin electrode). Plasma discharge effects like, shock wave, hydroxyl radical, electric field and ultraviolet light were investigated. Generally, plasma and plasma-chemical processes accompanying plasma discharges in water have received little study to date. This study shows the electric discharge phenomenon is useful to inactivation algae in the water and the killing effect of algae is showing. High voltage electrical discharge in water has been considered as a potential method of water treatment to kill microorganisms, negating the use of chemicals such as chlorine that leads to disinfection by-products which may additionally compromise human health.

Many scientists are trying to know how to control and how to use pulse power discharge and concomitant effects. The aims of this work was to investigate the effectiveness of a high voltage pulse power discharge, with pulse energy of 5 Joules, in killing algae in the water. Water volume was 700 ml. The pin copper electrode diameter was 0.9 mm and different one it was screw electrode diameter 6 mm, diameter of the screw head was 10 mm and 80 mm length and the high voltage was applied on it. On the down site water tank was mesh electrode made from copper wires diameter of 0.1 mm was grounded. Water temperature was room temperature. Algae were added direct from different water tank. The results showed that the most useful mechanism for inactivation (killing) algae was shock wave, 100% algae were killing by it. In our case ultraviolet light, hydroxyl radicals, and strong electric field were not useful for killing algae. Water conductivity and pH did not change too much during experiments. Inactive algae did not change shape and size, but color became different. Non additive process, no chemicals, filtrations are required to be added to the water to inactive and eliminate algae.