



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kenna T. Vecchiarelli</b>	<b>Project Number</b> <b>J1133</b>
<b>Project Title</b> <b>H(2)O: From Hazard to Health</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of this experiment was to determine the most effective technique in water purification between coagulation, disinfection, and filtration. The hypothesis was that coagulation would be the most effective method, followed by disinfection, and finally filtration. <b>Methods/Materials</b> Contaminated water was distributed into twenty jars to create five samples each of untreated, coagulated, disinfected, and filtered water. Aluminum sulfate was used for coagulation. Chlorine was added for disinfection. Layers of gravel, carbon material, and sand formed a filter. The samples were tested for pH, ammonia, and nitrate by using solution drops and color key cards. Using a sterile swab, agar, and a petri dish, each sample was tested for bacteria. The petri dishes were stored in a warm, moist cooler and bacterial colonies were counted after a number of days. <b>Results</b> With the least resulting bacteria, coagulation had an average of 55.2 bacterial colonies. It also lowered the pH from 7.84 to 6.8 and resulted in a higher amount of nitrate. Disinfection was most effective removing .25ppm ammonia. Overall, filtration was least effective. <b>Conclusions/Discussion</b> The hypothesis was supported with coagulation as the most effective purification method, followed by disinfection, and finally filtration.	
<b>Summary Statement</b> This project examines the effectiveness of processes used in water purification.	
<b>Help Received</b> Parents and teacher helped me acquire materials needed for project.	