

Discussion of daphnia essay sample



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The data supported the hypothesis that if Daphnia are placed in differently concentrated solutions of barium and calcium chloride, then the highest concentration of calcium chloride would affect them the most because of the production of hydrochloric acid and calcium oxide from the mixing of water and calcium chloride, two very dangerous acids, with the highest concentration having the biggest chemical reaction. Within five minutes of putting the Daphnia into the 10 (ppt) solution of calcium chloride, one or more of the Daphnia died. The Daphnia in the 1 (ppt) solution of calcium chloride died before the Daphnia in the 1 (ppt) solution of barium chloride, and same with the . 1 (ppt) solutions. Daphnia are freshwater organisms, so when they were exposed to saltwater, the pressure difference between their body fluids and the saltwater surrounding them forces the fluids out of them, resulting in dehydration. The solution of calcium chloride was more concentrated than the fluids inside of the Daphnias' bodies, promoting osmosis. Since Daphnia live exclusively in freshwater, they did not have the adaptations to cope with this change in fluid concentration.

The combination of calcium chloride reacting with water to form heat and the higher density of saltwater makes it understandable for an organism as small as Daphnia not used to those conditions to die off quickly. A saltwater organism is constantly ingesting water and excreting salts, a process necessary in maintaining equal balance of fluids within itself and its environment. In the short amount of time the Daphnia were maintained in the barium chloride and calcium chloride, they most likely ingested some of the solution and weren't adapted to excrete it. Therefore, the water inside of their cells was sucked out due to salty-solution exposure. In any case, the

Daphnia would have been dehydrated whether or not they actually ingested the solution, during the process of osmosis.

Since the same dropper was used to measure out both solutions and the control, there could have been a little bit of mixing. The amount of food given to each group of Daphnia was also not measured, so if one group was fed a lot more or less than the others, that could have affected the Daphnia even more than the solutions themselves. The control may not have been too accurate either, considering the fact that it was sitting out in a less than ideal environment, where the air or things falling in could have contaminated it.