Effectiveness of a Fire-Fighting Foam as an Eco-Friendly Replacement

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Water is a highly effective extinguishing agent utilized for brush fires, however, it requires massive amounts of water to be utilized for large environmental fires. For my experiment, I tested and created a suitable fire foam to test its abilities compared to water to see its effectiveness against fires. Two solutions of fire foam were created and compared to a solution of water to show effectiveness. Each solution was tested against controlled brush fires utilizing petroleum, a common fire starter in the environment. In each test, the times of fire and flame extinguished and overall milliliter usage was measured and compared. Afterward, a t-test was used to see significant differences between the foam solutions. The comparison showed that foam solution #2 was largely more effective than solution #1 across all three data examinations and that compared to water, solution #2 is very similar in effectiveness. Between extinguishing time for the total fire, foam solution #2 took an average of 108 seconds while solution #1 took 157 seconds, and water 88. In milliliter usage, solution #2 and water were very similar, with a 9-milliliter difference. This study showed that the foam solution I created is similar in effectiveness to water. Although it may take slightly longer, it is outweighed by its benefits, as it utilized 70% less water than the water needed for its sample. Environmentally, this foam would have a significant impact as it not only is similar in effectiveness to water but fulfills the task of conserving more water.

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