



Colorado Science and Engineering Fair

2025 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Can I drink that?

Finalist's Name: Sky Richards

School and City: Stratton, Stratton

Sponsor's Name: Dannette McConnell

Category: Earth & Environmental Sciences

Division: Senior (grades 9 - 12)

Abstract (250 words or less):

Freshwater is abundant in the world, but much of it is undrinkable due to contaminants. This project investigates the effectiveness of an at-home water filter made from basic materials to purify water enough to be considered safe for drinking. My hypothesis was that a filter could purify water based on the historical use of sand in water filtration. To test this, I created a layered filter using a two-liter bottle with the following materials (from bottom to top): a coffee filter, charcoal, sand, rocks, sand, and rocks. After pouring pond water through the filter, I collected the sample. Then I used an agar plate to look at the bacteria in the control pond water and the filtered water. The filtered water showed significantly fewer bacteria colonies. Additionally, I conducted a full water quality test for substances like lead, iron, copper, nitrates, pH, chlorine, and others. The test revealed that while the alkalinity of the water decreased after filtration, levels of sulfates and chlorine increased, likely due to contamination in the sand and the time it took to filter the water. In conclusion, the tests determined the water was objectionable as to whether the water was safe to drink, making my hypothesis incorrect. This suggests that simple rock and sand filters may not be a reliable method for purifying water.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**