

# CWSF 2019 - Fredericton, New Brunswick



## Dana Mavrow

### Reused Christmas Trees: Creating a Biodiesel from Pine Needles

**Challenge:** Environment

**Category:** Intermediate

**Region:** Vancouver Island

**City:** Oak Bay, BC

**School:** Glenlyon Norfolk School

**Abstract:** In order to end reliance on fossil fuels and find a use for the 5-6 million Christmas trees recycled, burned, or left to decompose each year, I decided to create an alternative fuel from this plant waste. I extracted the pine oil from the needles using a sonicator, converted it to a biodiesel, and then tested the quality of the biodiesel compared to ethanol.

#### Biography

My name is Dana Mavrow and I am in grade 10 at Glenlyon Norfolk School, and for my project I created a biodiesel from pine needle plant waste. With climate change becoming a more pressing issue each year globally, I wanted to find an environmentally friendly alternative to one of the biggest contributors to global warming: fossil fuels. They power the majority of our factories and transportation, but if there was a cleaner burning type of fuel developed with green materials and processes, this would have a substantial impact on our environmental footprint. I achieved this goal by first extracting pine oil from the pine needle waste, and then using that oil to create the biodiesel. Moving forward, I would like to increase the yield of oil from the needles and also test the yields for different types of evergreen species. I would highly recommend science fair to anyone who wants to investigate a topic they are passionate and develop their curiosity in any scientific area, as it is an unforgettable experience. At my school I'm currently a member of the Model UN, debate, Team Science, and theatre clubs, and play for both the ultimate and soccer team.

#### Awards

#### Value

Excellence Award - Intermediate - Bronze Medal Sponsor: Youth Science Canada	
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
Total	\$1 000