



# NRSEF 2022

Awards Ceremony

# Welcome!

Thank you for participating in the 59<sup>th</sup> annual Niagara Regional Science and Engineering Fair!

28 projects

33 participants

Countless hours of science!



NRSEF  
ESRN

# Thank you!

We are grateful for the annual support we receive from our donors. Their donations fund our event, participation prizes and category awards.

# A Message From the Chair

Patrick Nadeau, Chair, NRSEF



NRSEF  
ESRN

# The Main Event



# Juvenile Category Awards



# Juvenile Category – Bronze Medal

📄 REPORT


## Tu dois laver tes mains!


Bonjour! ♥ Nous sommes Esmée et Vienna. Aujourd'hui nous vont te montrer notre projet de comment que vous avez besoin de laver vos mains beaucoup plus que vous penser et ont vais le faire avec le pain et les boites de pétri


SEE MORE ▾

TEAM

+







DISEASE & ILLNESS


🔍

LIST VIEW

**GRID VIEW**

LINKED PROJECTS

TEAM CHAT




**Esmée Séguin Smith**  
@esmeeseguinsm...

👤 1

🔑 0

🔊 0

**FOLLOW**



**Vienna Repac**  
@ViennaR

👤 2

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# Juvenile Category – Silver Medal



## Meat Preservatives

Freezers are well known as great tools for preserving raw meat. Is it possible though to preserve raw meat without a freezer? Could natural preserving substances, such as honey, vinegar and salt-water, do the job as well? To figure that out, this topic was investigated. A piece of raw meat was placed in honey, vinegar and salt-water and th...

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TEAM



AGRICULTURE, FISHERIES & FOOD

[REPORT](#)



**Alaa Nouredine**

@anouredine

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# Juvenile Category – Gold Medal



## Stinky Science: From Trash to Biogas

Everyday, households, restaurants and school cafeterias generate pounds upon pounds of fruit and vegetable scraps. Did you know these food scraps can be used to make biogas? In my project "Stinky Science: From Trash to Biogas" I posed the question "What food in the pantry creates the most biogas? I placed different fruit and vegetable scraps

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TEAM



ENERGY

REPORT



Antonio Geremia  
@antoniog19

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# Junior Category Awards



# Junior Category – Honourable Mentions




REPORT

## Ice: A Hindrance to Hydroelectric Power Generation on the Niagara River

What happens when ice builds up over the winter on the Niagara River? How does the build-up of ice affect the production of hydroelectric power being produced by Ontario Power Generation? What methods need to be utilized in order to remove and get rid of ice build up so that the water from the Niagara River continues to flow and generate power for the people of Niagara and beyond?

In order to figure this information out, I researched hydroelectric power generation over the years in Niagara, and researched the various problems and conflicts that may arise if ice is allowed to accumulate and

 **Liam Dineley**  
@lonyStarSmarts

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Communications

## Summary

Hydrogen Energy  
Youth Science Canada  
Society of Science & Technology



REPORT

## What helps get stains out best liquid, powder, or capsule detergent?

Going through the laundry detergent aisle, there are so many choices, and all states of matter that laundry detergent can clean in so, that got me thinking, do all these substances clean the same? Therefore, I decided to test out 3 different detergent forms of the same price reference. I tested each brand, liquid, powder, and capsule, and found out...

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TEAM

CURIOUSITY & INQUIRY

 **Malak Farhat**  
@mlfarhat

0 0 0

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REPORT

## Which insulator is better at preserving ice for a longer period of time?

Insulators are substances used to preserve the temperature of many different things. Two insulators, aluminum foil and cotton, are commonly used worldwide. Have you ever wondered which one is better at preserving cold objects, like ice? In this experiment, aluminum foil and cotton will be tested to see which is the better insulator.

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ENERGY

 **Zainab Favour**  
@zafavour

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# Junior Category – Bronze Medals



## Does Climate Affect Mushroom Growth?

The purpose of our project was to see if climate affected the growth of mushrooms. We bought three mushroom growing kits and grew them in different climates. Batch one was cold, batch two was hot, and batch three was the recommended climate, making batch three the control group. After several weeks, we found out that the environment affected the speed of growth in the mushrooms. The batch in the warmest climate (batch two) grew first, the control group (batch 3, room temperature) soon grew after that and it grew almost double the size of batch two. We think that this project is important because it helps people in the mushroom growing industry know which climate is appropriate for growing mushrooms.

TEAM

AGRICULTURE, SERIES & FOOD

REPORT

Alexandra Diaz  
@AlexDiaz

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Zoe Tarabo-Blair  
@zotblair

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## Which toothpaste chemical works best for whitening teeth?

Whitening teeth has been highly advertised over the past years, convincing consumers to spend more money on certain products. Understanding how different chemical whiteners in brands of toothpaste work can play a huge role in selecting the most efficient products to improve your oral hygiene. Thus, the effect of different toothpaste brands on whitening teeth was tested. Colgate toothpaste, which contains hydrogen peroxide as its whitening agent, was found to be more effective than Pronamel toothpaste, which contains silica as its whitening agent. As consumers, it is important to investigate the different chemicals in toothpaste rather than just follow the recommendations in advertisements to make wiser choices in selecting hygiene products.

TEAM

REPORT

Tiba Alsaeidi  
@talsaeidi

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# Junior Category – Silver Medal



REPORT

## What is your temperature?

As COVID hit I saw infrared thermometers everywhere taking my temperature. I also noticed that many lightbulbs have temperatures on them. These temperatures were very high but when I hold a light bulb it is not very hot. Turns out these were related let me tell you how. Something in the radiation from a lightbulb or from a forehead must be reporting on its temperature (but not always correctly?)

All heated objects glow, and emit light, in a broad combination of colours. Some of the colours are invisible - they are in the infrared (longer wavelength than red, like the heat from a campfire we feel on our face), or in the ultra-violet (wavelength shorter than purple, like the sun's radiation that gives us sunburns). I was able to borrow an optical spectrometer. Its built around a webcam so I can just see the image on my computer. And what I see is stripes of colour or colour spectrums. The



**Maya Sternin**

@MS2009

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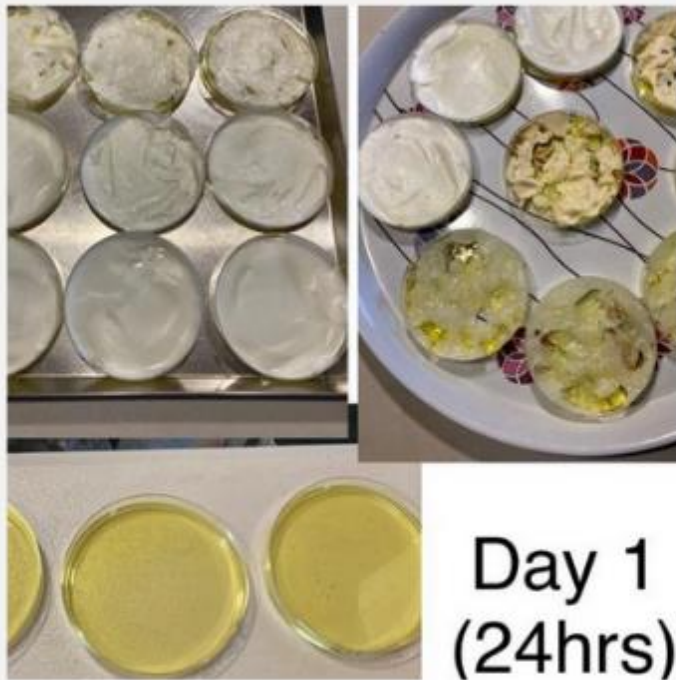
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# Junior Category – Gold Medal



Day 1  
(24hrs)

## Lotion Commotion - Testing Moisturizers Abilities to Keep Skin Hydrated

I've always wondered which moisturizer works best for my skin, so that's why I decided to test how effective different moisturizers are at keeping the skin hydrated.

I made JELL-O (to act as skin) and filled 21 petri dishes with

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TEAM



HEALTH & WELLNESS

REPORT



Taylor Pirri  
@hockey34

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# Intermediate Category Award



# Intermediate Category – Gold Medal

**The Dynamic Highway Speed Emission Control System**



Sophie & Chloe Filion 2022

REPORT

## The Dynamic Highway Speed Emission Control System

Stop-and-Go traffic contributes to significant pollution. Every time a vehicle slows down, vehicles waste energy.



We invented a new highway posted speed sign that adjusts its value to reduce stop-and-go traffic. This sign has three modes: maintain speed (blue), increase speed (green), or decrease speed (red). Drivers see the colour of the sign and adjust their travel speed accordingly.

By applying this technique, our predicted calculations using a vehicle density of 100,000 vehicles/day on the QEW in a stop-and-go condition results in a reduction of 32,000MJ/day. This is equivalent to 5,554 liters of fuel and 1,393.5 tones of carbon emission per day. Over one year, this contributes to 508,634 tones of carbon not emitted to our environment only applied to the Niagara QEW section.

This project significantly reduce emissions on highways, reduces driver stress, dangerous conditions, and reduces fuel consumption.

SEE LESS ^

TEAM


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**Sophie Filion**  
@sophiefilion

10 1 91

I live on a small farm along the welland river. I enjoy piano, knitting, and outdoor activities. I am in the...

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 **Chloe Filion**  
@chloeraefilion

9 1 7

I love reading books, riding my ATV, and taking care of my animals. I am in the aircadets and adventure...

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# Senior Category Awards



# Senior Category – Honourable Mentions



REPORT

## Does Parliament Reflect the People's Choice?

The purpose of my project was to observe the effect of changing the electoral system of Canada on the number of seats political parties held in the House of Commons in past elections. I was interested in the change between the current first-past-the-post system and proportional representation which aims to represent the popular vote.

SEE MORE

TEAM





#Discovery

#curiosityandinquiry

#region\_grade\_senior11/12

**Kirsten Toohey**  
@KToohey

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REPORT

## The Great Ferrous Wheel of the Deep

Iron(Fe) is a very important mineral in many life forms. These important roles that iron consistently take over span from the use in enzymes and hemoglobin, to being a component in redox and chemosynthesis. Iron is so important that there is a cycle coined the "Ferrous Wheel".

SEE MORE

TEAM





#Curiosity&Inquiry

**Matthew Nywenig**  
@MatthewNywenig

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# Senior Category – Silver Medal



REPORT

## Social Media, Toying with Youth Aged 13-25's COVID-19 Response?

The 2019 Coronavirus pandemic prevents people from communicating in-person safely, so social media has become a popular tool for youth to connect safely. This study determines if SM influences 13-25-year-old Ontarians when they choose to obey COVID-19 restrictions. Study participants are to write a questionnaire asking how much they use social media, their exposure to social media content showing someone disobeying COVID-19 restrictions, age, self-esteem, vaccination records, times they contracted COVID-19, how much they trust people, and how well they obey COVID-19 restrictions. The study also wishes to find if trust, self-esteem, or time online affect social media's influence. Finally, the study finds if friends have greater influence than a stranger, and if knowing someone longer affects influence. The study finds social media has no influence on youth aged 13-25 to disobey COVID-19 restrictions, no matter time online, self-esteem, and trust. The longer the person knows someone, the greater influence they have on them, and one's



**Connor Fraser**  
@Connoralex7782

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# Senior Category – Gold Medal



**SMIGLASIDE-C**

**PART II**

REPORT

## Smiglaside-C Part 2: Developing Hydrogel Films from *A.muricata* Extracts for Wound Healing Purposes

Wound infections are a rising global health concern, and with the rise of antibiotic-resistant bacteria, the risks of wound infections are increasing. Hydrogel films have been used to treat wound infections, due to their “artificial skin” like characteristics. Previous years of this research discovered the antibacterial properties of *A.muricata* (sol) [SEE MORE](#) ✓

TEAM



DISEASE & ILLNESS



**Dheiksha Jayasankar**  
@DheikshaJayasa...

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# Team Niagara

# Team Niagara

**The Dynamic Highway Speed Emission Control System**

Step-and-go method control system to adjust speed limits based on real-time data and weather conditions.

Two students have designed a control system for the speed limit system. The system is designed to adjust the speed limit based on real-time data and weather conditions. The system is designed to adjust the speed limit based on real-time data and weather conditions.

By applying this technique, our predicted to reduce traffic congestion and improve road safety. The system is designed to adjust the speed limit based on real-time data and weather conditions.

Follow

**Smiglaside-C Part 2: Developing Hydrogel Films from A.muricata Extracts for Wound Healing Purposes**

World leaders in developing global health care, and with the use of artificial intelligence, the development of hydrogel films for wound healing purposes has been achieved. The system is designed to adjust the speed limit based on real-time data and weather conditions.

Follow

**Social Media, Toying with Youth Aged 13-25's COVID-19 Response?**

The 2019 COVID-19 pandemic has led to people more communicating in-person rather than online. This has led to a decrease in the number of people who are using social media. The system is designed to adjust the speed limit based on real-time data and weather conditions.

Follow

**Lotion Commotion - Testing Moisturizers Abilities to Keep Skin Hydrated**

The lotion commotion is a test to see how effective different moisturizers are at keeping skin hydrated. The system is designed to adjust the speed limit based on real-time data and weather conditions.

Follow



**What is your temperature?**

At COVID-19, we have found that the most common way to measure temperature is by using a thermometer. The system is designed to adjust the speed limit based on real-time data and weather conditions.

Follow

**Does Climate Affect Mushroom Growth?**

The purpose of this project was to see if climate affects the growth of mushrooms. The system is designed to adjust the speed limit based on real-time data and weather conditions.

Follow

**Which toothpaste chemical works best for whitening teeth?**

Whitening teeth has been a popular topic for many years. The system is designed to adjust the speed limit based on real-time data and weather conditions.

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# CONGRATULATIONS!

The projects are now visible for public viewing at  
<https://projectboard.world/ysc/region/niagara>



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