

Ethics & Safety in Science

Ethics

Ethical standards in science are in place to make sure scientific subjects (people or animals) are kept safe from harm, and their dignity, privacy, comfort and overall well-being are maintained during scientific exploration and discovery.

Safety

Safety standards are in place to make sure people aren't hurt, and property/the environment isn't damaged during scientific exploration and discovery.

Why are Ethics and Safety important for my STEM project?

- These ethical and safety standards reflect the values of the scientific community, namely respect for others and personal integrity
- As scientists, it's important that we understand how our actions and investigations into science can potentially impact or harm others
- Ethics and safety violations in your STEM project can disqualify you from your regional science fair, the national Canada-Wide Science Fair, and international competitions

Safety Concerns in STEM Projects

Does your project involve:



Harmful Chemicals



Flammable Substances



High Voltage



Mechanical Parts



Explosives



Biohazardous Material

If your project uses any of these substances, consult your regional Ethics & Safety Committee to see if you're required to take additional steps or precautions in your project.

In general, no hazardous substances are permitted for display during the science fair exhibit.

* Ask Yourself:

- Have I been trained to do this?
- Do I have permission to do this?
- Do I have adult supervision?
- Is there a safer way to do this?
- Do I have the required safety materials and clothing?
- Am I putting myself or others in danger? (including animals and the environment.)
- What is my safety plan if something goes wrong?

* Taken from mystemspace.ca, Youth Science Canada

How do I know if I need Ethics Approval?

Does your project involve:

Humans, including:

- surveys
- interviews
- skill tests
- behavioural tests
- reaction tests
- taste or smell tests
- human tissue, including cells, blood and organs

Animals (chordates), including:

- behavioural tests
- ingestion (food or drink)
- observation
- dissection
- animal tissue, including cells, blood, organs and other parts

* Ask Yourself:

- Does my idea involve testing people or animals? (includes animal tissue, blood, etc.)
- Could my idea cause harm or stress to people or animals?
- Before starting, have I researched and made a plan to make sure my idea is ethical?
- Do I have an adult supervisor to support me in my work?
- Do I have consent from the people participating (or their parents, if they are under 18)?
- Is there a more ethical way to do this?

* Taken from mystemspace.ca, Youth Science Canada

Projects Involving Humans: Low Risk vs. Significant Risk

Low Risk

A **Low Risk** STEM project involves only those conditions where the risks of harm or stress are not greater or more likely than your participant would encounter in everyday life. These could include:

- Some surveys/interviews
- Some food and drink projects
- Some caffeinated beverage projects
- Some absorption through the skin projects
- Some exercise projects

Just because your project fits one of these descriptions doesn't automatically make it low risk. If you're not sure, check with your regional Ethics and Safety Committee.

Significant Risk

Any STEM project that is not Low Risk is automatically considered **Significant Risk**. These projects require a higher degree of caution and supervision. Significant Risk projects could include:

- The use of drugs
- Invasive procedures or the use of bodily tissues
- Ingestion of products not meant for human consumption, not considered common or everyday food/drink, or consuming more food/drink than is safe
- Exercise beyond normal everyday activity

Significant Risk projects must be carried out in an appropriate environment, such as a hospital or laboratory, and performed under the supervision of your Scientific Supervisor.

*ALL projects involving humans must also provide a **Letter of Information** and an **Informed Consent Form** to the participants, and these forms must be submitted to your regional Ethics and Safety Committee.*

UPCOMING PROGRAMS

From Science Fair Foundation BC

Science Fair Foundation BC's

STEM Workshop

STEM Workshops

"What's a STEM Project?"

[October 12th, 2021](#)

"Why to How:

Understanding the Scientific Method"

[November 9th, 2021](#)

"Understanding Ethics & Safety"

[December 7th, 2021](#)

"What Does an Awesome STEM Project Look Like?"

[January 18th, 2022](#)

"Analyzing Your Results"

[February 15th, 2022](#)

"Communication:

Reports, Presentations, Interviews"

[March 15th, 2022](#)

Mentorship Program

Have a question about your STEM project? Not sure what your results mean? Looking for expert advice on your specific STEM topic? Our Mentorship Program connects students across BC and the Yukon with science fair organizers, science fair alumni, scientists and industry experts to help in the development of their STEM projects. Send in your question using the webform on our website and get an answer from a mentor whose background best fits your subject matter.

- Available now until mid-April, 2022
- Email access to experts in your area of interest
- Get help during any phase of your project
- Go to www.sciencefairs.ca/ask-for-help/mentorship

Discovery Foundation STEM Project Grant

Have a great idea for a STEM project, but don't have the resources to make it a reality? The Discovery Foundation STEM Project Grant awards project funding to Grade 4 to 12 students in BC and the Yukon who plan to participate in a science fair or the Youth Innovation Showcase in 2022.

- [Deadline is December 15th, 2021](#)
- Funding up to \$200 for STEM projects
- Will cover costs for project supplies, access to academic journals and lab space/equipment, and registration fees for science fairs or the Youth Innovation Showcase
- Go to www.sciencefairs.ca/ask-for-help/financial-aid

Find out more at www.sciencefairs.ca, following us on social, or subscribing to our newsletter.