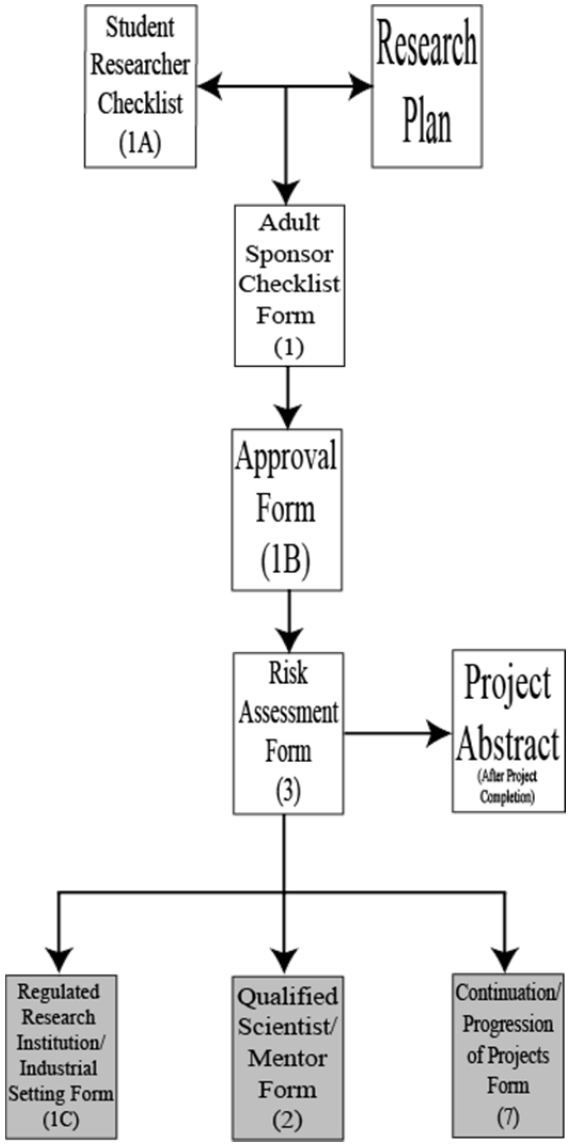
Requirements for ALL Projects

ALL projects must have the following forms completed:



- **Student Researcher Checklist Form (1A)** – this is information about the student(s) working on the project, when the experimentation will take place and where. This is to be completed by the Student Researcher before submitting it along with the Research Plan, Approval Form 1B, Risk Assessment Form 3 and other relevant forms to the Adult Sponsor for approval.
- **Research Plan** – a brief, but detailed explanation of the rationale behind the project idea, the research question(s), the procedures/methodology, the risk assessment and background exploration. This is to be completed by the Student Researcher PRIOR to experimentation and written in the present or future tense.
- **Adult Sponsor Checklist Form (1)** – this is a review of the details about the project and whether or not it requires prior approval or not. This is to be completed by the Adult Sponsor in collaboration with the Student Researcher PRIOR to experimentation.
- **Approval Form (1B)** – this is where the various people sign off their approval of the project. A separate Approval Form is required for each Student Researcher if it is a team project.
- **Risk Assessment Form (3)** – this is a review of the risks that might be associated with the project. This is to be completed by the Student Researcher in collaboration with the Adult Sponsor, Designated Supervisor and/or Qualified Scientist/Mentor PRIOR to experimentation.
- **Project Abstract** – this is a summary of the project that is completed once the experimentation is done and the data has been analyzed.

Some additional forms that MIGHT be required include:

- **Qualified Scientist/Mentor Form (2)** – this is used to document when the Student Researcher works with a mentor who is a professional in the area of their project. This is to be completed by the Qualified Scientist/Mentor who is advising and/or supervising the Student Researcher(s) PRIOR to experimentation.
- **Regulated Research Institution/Industrial Setting Form (1C)** – this is a summary of what the Student Researcher did at a professional lab. This is to be completed by the supervising adult who is affiliated with the laboratory and who has first-hand knowledge of the student's work and is completed AFTER experimentation.
- **Continuation/Progression of Projects Form (7)** – this is used to document prior work that the Student Researcher has done in the same field of study as the current work. This is to be completed by the Student Researcher AFTER experimentation and include copies of the previous years' abstract and Research Plan.

Middle School - Adult Sponsor Checklist Form (1)

This form is required for ALL projects and MUST be completed PRIOR to experimentation.

This form is to be completed by the Adult Sponsor in collaboration with the Student Researcher/Team Leader.

1. Student's Name(s):_____

2. Project Title:_____

_____

3. Adult Sponsor, please certify that you have reviewed the following (forms listed in b - e are REQUIRED for all projects) with the Student Researcher and agree with them by **initialing each line**:

_____a. I have reviewed the Rules & Guidelines for Middle School Science Research that apply to this project.

_____b. I have reviewed the completed Student Researcher Checklist Form (1A).

_____c. I have read and reviewed the proposed Research Plan and have determined it is appropriate.

_____d. I have reviewed the completed Approval Form (1B).

_____e. I have reviewed the completed Risk Assessment Form (3) and approve of the chosen Designated Supervisor.

4. The Student Researcher ☐ ***will*** / ☐ ***will not*** employ the expertise of a Qualified Scientist/Mentor. If yes, a Qualified Scientist/Mentor Form 2 is required. Please note, that the school/local SRC or IRB may require a student to work with a Qualified Scientist.

5. The Student Researcher ☐ ***will*** / ☐ ***will not*** work on the project at a Regulated Research Institution (i.e. university or college) or an Industrial Setting (i.e. hospital, water treatment plant, private lab, etc.). If yes, a Regulated Research Institution/Industrial Setting Form 1C will be required AFTER the project is completed.

6. This project ☐ ***is*** / ☐ ***is not*** a continuation/progression from a previous year. If yes, a Continuation Form 7 is required along with all previous years' abstracts and research plans.

7. This project ☐ ***does*** / ☐ ***does not*** involve human testing of a student deigned invention, prototype or computer application. If yes, #8 needs to be marked for Human Subjects and Form 4 must be completed.

8. This project ☐ ***does*** / ☐ ***does not*** involve one or more of the following, requiring PRIOR approval by an SRC and/or an IRB. *Please check all that apply:*

☐ **Human Subjects** – Projects involving human subjects require PRIOR approval by an IRB and the following:
- Human Participants Form 4 **AND POSSIBLY**
- Unsigned Sample of Informed Consent Form (if required by the IRB) **AND POSSIBLY**
- Qualified Scientist/Mentor Form 2 (if required by the IRB)

☐ **Vertebrate Animals** – Projects involving vertebrate animals require the following:
- Vertebrate Animal Form 5A – if project is conducted at school, home or in a field setting; PRIOR school/local SRC approval is required in this case **OR**
- Vertebrate Animal Form 5B – if project is conducted at a Regulated Research Institution; PRIOR Institutional Animal Care and Use Committee (IACUC) approval is required in this case **AND POSSIBLY**
- Qualified Scientist/Mentor Form 2 (if required by the SRC)

☐ **Potentially Hazardous Biological Agents** – Projects involving microorganisms (known and unknown), rDNA and human or animal tissue require PRIOR approval by either the school/local SRC or university regulatory board and the following:
- Potentially Hazardous Biological Agents Risk Assessment Form 6A **AND POSSIBLY**
- Human and Vertebrate Animal Tissue Form 6B (to be completed along with Form 6A when a project involves fresh or frozen tissue, primary cell cultures, blood, blood products and bodily fluids) **AND POSSIBLY**
- Qualified Scientist/Mentor Form 2 (if required by the SRC)

Adult Sponsor's Printed Name	Adult Sponsor's Signature	Date of Review (mm/dd/yy) (MUST be PRIOR to experimentation)
Phone Number	Email	

Middle School - Student Researcher Checklist Form (1A)

This form is required for ALL projects and MUST be completed PRIOR to experimentation.

This form is to be completed by the Student Researcher/Team Leader before submitting it with the Research Plan, Approval Form 1B, Risk Assessment Form 3 and other relevant forms to the Adult Sponsor for approval.

1. This project will be an ☐ ***Individual*** / ☐ ***Team*** project. The student(s) working on this project will be:

Individual/Team Leader:_____ Grade:_____

Email:_____ Home Phone:_____

Team Member 1:_____ Grade:_____

Team Member 2:_____ Grade:_____

2. Proposed Project Title:_____

3. School:_____ School Phone:_____

School's Physical Address: _____

_____

4. Adult Sponsor:_____ Email:_____

MUST match person signing Form 1!

5. This project ☐ ***does*** / ☐ ***does not*** require PRIOR SRC or IRB approval.

6. I/We plan on starting our experimentation/data collection/engineering of the project on:_____
(mm/dd/yy)

7. This project ☐ ***is*** / ☐ ***is not*** a continuation or progression from a previous year. If yes, a Continuation/ Progression Form 7 is required along with all previous years' abstracts and research plans.

8. The **ACTUAL** laboratory experimentation/data collection/engineering designing began and ended on the following dates (this can be filled in once the project is completed):

_____ _____
ACTUAL Start Date (mm/dd/yy) ACTUAL End Date (mm/dd/yy)

9. I/We will be conducting our laboratory experimentation/data collection/engineering designing at the following locations (check ALL that apply):

☐ School ☐ Home ☐ Research Institution ☐ Field ☐ Other:_____

10. Non-school and non-home work site physical address(es) are (additional sites can be attached on a separate page):

Site 1 Name:_____ Site 2 Name:_____

Site 1 Address:_____ Site 2 Address:_____

_____ _____

Site 1 Phone Number:_____ Site 2 Phone Number:_____

Site 3 Name:_____ Site 4 Name:_____

Site 3 Address:_____ Site 4 Address:_____

_____ _____

Site 3 Phone Number:_____ Site 4 Phone Number:_____

11. Prepare a Research Plan following the instructions on page 9 and attach to this form.

Middle School - Research Plan Instructions

A typed, detailed research plan is required for ALL projects and MUST accompany the Student Researcher Checklist Form (1A) and Risk Assessment Form (3) and be completed PRIOR to experimentation.

The Research Plan is a brief, but detailed explanation of the rationale behind the project idea, the research question(s), the procedures/methodology, the risk assessment and background exploration. This MUST be completed PRIOR to experimentation in order to be approved by the Adult Sponsor and the SRC/IRB (if required). Any changes to this plan MUST be documented (make an amendment to the original document) and approved by the Adult Sponsor and the SRC/IRB (if required) before work can continue on the project.

The research plan for ALL projects MUST include the following parts:

1. What is the **rationale/reason** for doing this project? Include a brief summary of the background research you did in relation to your project and explain why this research is important scientifically and, if applicable, any impacts to society in general your research has.
2. State your **hypothesis(es)**, **research question(s)**, **engineering goal(s)**, and/or **expected outcomes** (predictions) for your project. Be sure it ties into your rationale/reason.
3. Detail ALL **procedures** and **experimental design** processes that you are going to follow. Be sure to include exactly how data is going to be collected.
4. Identify ANY and ALL **potential risks** and safety precautions you need to be aware of in completing your project. This should include the building of any apparatus needed to collect data for your project. Include this information on the Risk Assessment Form 3.
5. Describe the procedures you will use to analyze the data/results to answer your research question(s) or hypothesis(es).
6. List at least **five (5) major references** (i.e. science journal articles, books, internet sites, etc.) that you read in your background exploration in the proper works cited format. If you plan on using vertebrate animals in your project, one of these MUST be an animal care reference. *Please note that Wikipedia should NOT be one of the five references – it can be included only if you have more than five.*

If your project includes Human Subjects, Vertebrate Animals and/or Potentially Hazardous Biological Agents (microorganisms, rDNA, tissue), then your research plan MUST also include the following:

1. **Human Subjects** (prior IRB approval and Form 4 are required; Informed Consent and Form 2 may be required by the IRB)
   a. Describe in general the type of people who will participate in your study (age range, gender, racial/ethnic composition, etc.).
   b. How will you recruit your participants? How will they be invited to participate?
   c. What exactly will the participants be asked to do? Include any surveys, questionnaire or test questions that you plan on using. How often and for how long will each participant be asked to commit to?
   d. What are the potential risks or discomforts *(remember to think about emotional as well as physical*) to the participants? How will you minimize those risks?
   e. What are the potential benefits to the individual participants as well as to society in general?
   f. Will you be collecting any identifiable information (i.e. name, age, grade, phone numbers, birth dates, emails, etc.)? Is this a confidential or anonymous study?
   Confidential studies may collect identifiable information, but must be kept separate from the data being analyzed using a number key that only the researcher and adult sponsor has access to.
   Anonymous studies don't collect any identifiable information along with the study so that not even the researcher or adult sponsor knows who gave what answers.
   g. How will you inform participants about the purpose of the study, what they will be asked to do, that their participation is voluntary and they have the right to stop at any time? This can be done via an Informed Consent Form or on the survey directly if informed consent is not required by the IRB.

2. **Vertebrate Animals** (prior SRC approval and Form 5A or 5B are required; Form 2 may be required by the SRC)
   a. Briefly discuss potential ALTERNATIVES to vertebrate animal use in your project and a detailed justification for using vertebrate animals. Explain the potential impact or contribution to society this project may have.
   b. All procedures must be DETAILED and include methods used to minimize potential discomfort, distress, pain and injury to the animals during experimentation. If chemicals or drugs are used, concentrations and dosages MUST be exact.
   c. What is the species, strain, sex, age, etc. of the animals being used? How many animals will you be using in the study and why is that number appropriate? What is the source of the animals?
   d. Where will the animals be housed (cage/housing size, bedding, etc.). What will be included in the daily care of the animals (food, water, exercise, etc.)?
   e. What will happen to the animals at the end of the study?

3. **Potentially Hazardous Biological Agents** (prior SRC approval and Form 6A are required; Form 6B and Form 2 may be required)
   a. What biological agent (microorganism, rDNA, tissue, cell line, etc.) are your using and where did it come from?
   b. What Biosafety Level did you determine your project involved and why?
   c. How are you going to keep yourself and others in the lab safe while you are working with the biological agents?
   d. How are you going to dispose of the biological agents once your project is complete?

Middle School - Approval Form (1B)

A SEPARATE approval form is required for ALL Student Researchers.

1. To be completed by Student Researcher and Parent/Guardian PRIOR to experimentation.

a. Student Acknowledgement:

- I understand the risks and possible dangers to me associated with the proposed research plan.
- I have read the Rules and Guidelines for Middle School Science Research and will adhere to all rules while conducting this research.
- I have read and will abide by the following Ethics Statement

Scientific fraud and misconduct are not condoned at any level of research or competition. Such practices include plagiarism, forgery, use or presentation of other researcher's work as one's own, and fabrication of data. Fraudulent projects will fail to qualify for competition in Colorado regional and state science fairs.

Student's Printed Name	Student's Signature	Date Acknowledged (mm/dd/yy) (MUST be PRIOR to experimentation)

b. Parent/Guardian Approval:

I have read and understand the risks and possible dangers to my child associated with the proposed research plan. I consent to my child participating in this research project.

Parent/Guardian's Printed Name	Parent/Guardian's Signature	Date Acknowledged (mm/dd/yy) (MUST be PRIOR to experimentation)

2. To be completed by the school or local SRC/IRB.

Required for projects involving human subjects, vertebrate animals and/or potentially hazardous biological agents. Check only ONE appropriate box:

☐ The SRC/IRB has carefully examined this project's Research Plan and all of the required forms are included. My signature indicates approval of the Research Plan **before** the student begins experimentation.

☐ This project was conducted at a regulated research institution (**not home, school, etc.**), was reviewed and approved by the proper institutional review board before experimentation AND complies with the CSEF Rules and Guidelines for Pre-college Science Research. **Form 1C, Form 2 and institutional approval documentation (i.e. IACUC, IRB, etc.) are attached.**

SRC/IRB Chair's Printed Name	SRC/IRB Chair's Signature	Date of Approval (mm/dd/yy)

3. To be approved by the Regional Science Fair SRC BEFORE competition.

Required for all projects attending the Colorado Science and Engineering Fair.

I certify that this project adheres to the approved Research Plan and complies with all Rules and Guidelines for Middle School Science Research.

Regional SRC Chair's Printed Name	Regional SRC Chair's Signature	Date of Approval (mm/dd/yy)

4. To be approved by the CO Science & Engineering Fair SRC BEFORE competition.

Required for all projects attending the Colorado Science and Engineering Fair.

I certify that this project adheres to the approved Research Plan and complies with all Rules and Guidelines for Middle School Science Research.

CSEF SRC Chair's Printed Name	CSEF SRC Chair's Signature	Date of Approval (mm/dd/yy)

Middle School - Risk Assessment Form (3)

This form is required for ALL projects and MUST be completed PRIOR to experimentation.

This form is to be completed by the Student Researcher/Team Leader in collaboration with the Adult Sponsor, Designated Supervisor and/or Qualified Scientist/Mentor. All questions MUST be answered and additional pages may be attached.

1. Student's Name(s):_____
2. Project Title:_____

   _____
3. List **ALL** dangerous activities, hazardous devices, chemicals (household AND laboratory) and/or exempt microorganisms that are to be involved in this project.

4. Identify the risks involved in using **ALL** items listed in question #3. (What is the worst that could happen if something went wrong when working on your project?)

5. Describe the safety precautions you are going to take in order to minimize/reduce the risks identified in question #4. (How are you going to keep yourself and others around you safe while you are working on your project?)

6. Describe the disposal procedures you will use (when applicable) for items listed in question #3 (How are you going to SAFELY dispose of any hazardous items used in the project?)

7. List the source(s) of your safety information (in works cited format). Material Safety Data Sheets MUST be referenced when using chemicals (household AND laboratory.), but not attached.

Designated Supervisor:

I agree with the risk assessment and safety precautions described above. I certify that I have thoroughly reviewed the Research Plan and will provide **DIRECT supervision** of the Student Researcher(s) during experimentation.

Supervising Adult's Printed Name	Supervising Adult's Signature	Date of Review (mm/dd/yy) (MUST be PRIOR to experimentation)

Work Institution & Position	Email

Experience/Training as it relates to the project: