Tri-State Science and Engineering Fair

Elementary and Middle School

Scientific Rules & Handbook

Adapted from:

"Rules for Indiana Elementary and Middle School Science Research: 2023-2024"

A Publication of
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ACKNOWLEDGMENTS

A significant portion of the information in this document is inspired by the Intel International Science and Engineering Fair's document titled "International Rules for Precollege Science Research: Guidelines for Science and Engineering Fairs 2023-2024." You can access the original document online at https://www.societyforscience.org/isef/international-rules/rules-and-guidelines/ . We've adapted and used this valuable resource to create guidelines that are more accessible and user-friendly for our local science fair participants.

The aim of this document is to create a friendly and easy-to-understand set of rules and guidelines for children in grades K-8 who are working on research projects at home or at school so that they will be ready to participate in USI Tri-State Science and Engineering Fair. While students in grades 9-12 must follow the Intel ISEF rules, we've recognized that these rules and forms can be a bit tricky for younger students. So, we're here to simplify things and make it more enjoyable for everyone!

We've put together these rules and guidelines with one main goal in mind: to ensure that students, parents, and teachers have a safe and enjoyable experience while working on science fair projects. We hope that teachers at your school and district will find these guidelines helpful and choose to use them for their own science fairs. However, it's important to note that other Regional Fairs and the State Science Fair have the flexibility to set their own rules and guidelines. Guidelines may be more strict or more lenient at other sites. Please except there to be more extensive regulations at the State Science Fair. If you're looking for specific rules and guidelines for the state fair, feel free to reach out to your state fair director. You can also check out http://www.sefi.org for a comprehensive list of resources. We're here to make your science fair journey as smooth as possible!

REGISTRATION

The Science Education Foundation of Indiana offers an online system, completely free of charge, to assist teachers in smoothly registering their students for a regional science fair. If a student plans to participate in a regional fair and hopes to qualify for the state fair (HSEF), it's essential to have an active account on our system with all the necessary project details. The teacher's role is to oversee this account and guide the student in meeting all the necessary requirements.

Getting started is easy. Go to www.serfireg.org. Teachers should then create an account and have it authorized by the regional fair director. To expedite the authorization process, please email your regional fair director (afgrabert@usi.edu) immediately after you have created your account. Once the account is authorized, the teacher can log in and set up accounts for their students.

If you have any questions about using the system, don't hesitate to reach out to our Executive Director at gcook@sefi.org or your Regional Fair Director at afgrabert@usi.edu. We're here to assist you every step of the way!

SCIENTIFIC MISCONDUCT

We take the issue of scientific fraud and misconduct very seriously, and we want to emphasize that it is not tolerated at any level of science research. It's crucial that the work you submit for the science fair is entirely your own. Using another student's project and presenting it as your own will result in disqualification from the competition. We encourage all participants to maintain the highest standards of integrity in their research efforts.

GUIDELINES FOR SCIENCE FAIR PARTICIPATION – INFORMATION FOR EDUCATORS

1. **Project Proposal and Approval:** Before your students dive into their science fair projects, kindly encourage them to share their project ideas with you and seek your approval.

NOTE: You may use **Indiana Junior Division Project Form** found on pages 17 & 18 of this handbook as a tool in your classroom to approve *most* K-8 projects. This form should be signed for approval **BEFORE** experimentation begins.

EXCEPTION: Projects involving human, vertebrate animal, or bacterial studies must use the full required ISEF forms for approval before experimentation begins.

Check with your regional fair director for additional explanation of the rules and requirements for your students' projects.

2. **Project Types:** It's important to note that there are certain project types that are not suitable for students in grades K-8. Should any student express a strong interest in such projects, they may initiate a discussion with the Regional Fair Director in our region to explore the possibility of obtaining special permission.

3. **Display Guidelines:** Please ensure that your students are well-informed about the display guidelines. These guidelines exist to maintain consistency and fairness among all participants.

4. **Project Display Components:** When guiding your students, remind them to include the following components in their science fair project displays:

- **Logbook:** This document serves as a comprehensive record of their project, containing detailed notes, original observations, and experiment data.

- **Research Paper (typically for grades 6-8):** This report, spanning 4-10 pages, can be typed or neatly handwritten in ink. It summarizes the project and incorporates findings from the logbook, along with background research.
- **Exhibit Board:** Think of this as a visually engaging representation of their project's narrative, integrating images and key elements from the research paper.
- **Abstract:** A concise one-page summary (maximum 250 words) that succinctly presents the project's purpose, hypothesis, procedures, and conclusion.

5. **Team Projects:** In the spirit of collaboration, students may work together on a project as a team. Please be aware that a team should not exceed three members, although no more than two members is strongly recommended. You can assist by linking team members through the registration system using the "Group Wizard" tab at the top of the teacher landing page.

6. **Responsibility:** As educators, we play a vital role in overseeing compliance with these guidelines, ensuring well-designed projects, and maintaining a secure environment throughout the process. Remember, safety is crucial in all experiments. Before allowing any student to begin their research, please ask these questions to ensure safety:

1. Is it safe for people or animals involved?
2. Does the project meet the safety rules of higher-level fairs?
3. Have you addressed safety concerns with the student and parents?

For further information about safety, you can visit the Science Buddies website at http://www.sciencebuddies.org/science-fair-projects/project_ideas/Safety_Guidelines.shtml.

PROHIBITED / RESTRICTED RESEARCH

The research topics below are either not permitted or have conditions for students in grades K-8. This is not a comprehensive list. Teachers who have concerns about projects should contact their Regional Fair Director for guidance.

PERMITTED RESEARCH WITH CONDITIONS

1. Bacterial/Microorganism Studies (GRADES 6-8 ONLY)

- These studies must be conducted within a school setting, never in the home setting.
- Only approved bacterial/microbial cultures should be used. Check with your Regional Director for approved microorganisms. Examples ***may*** include baker's

yeast, brewer's yeast, mold growth on food items (if the experiment is terminated at the first evidence of mold), and E. coli k-12.
- The supervising teacher should be trained in handling bacterial cultures.
- The school must be certified at a BSL-1 (Biosafety Level 1) or higher by the regional Scientific Review Committee (SRC). Contact your Regional Fair Director for certification.

Note: Absolutely no bacterial studies are accepted from elementary school students (GRADES K-5), regardless of where the work was conducted.

Important: Most middle schools typically do not meet the BSL-1 requirements for approval. Elementary schools are not eligible for this certification status.

What is BSL-1 (Biosafety Level 1) laboratory? A BSL-1 certification stands for Biosafety Level 1 certification. It is a designation given to a laboratory or facility indicating its compliance with specific safety and containment protocols for handling microorganisms, particularly bacteria, at the lowest level of risk. BSL-1 is the lowest biosafety level, and it is suitable for work involving microorganisms that are not known to cause disease in healthy individuals.
In a BSL-1 certified facility:

1. **Microorganisms:** The microorganisms used are not typically pathogenic (disease-causing) to humans.
2. **Containment:** Basic laboratory practices and equipment are employed to minimize the risk of contamination and ensure the safety of lab personnel.
3. **PPE (Personal Protective Equipment):** Lab workers may be required to wear minimal protective gear, such as lab coats and gloves.
4. **Laboratory Access:** Access to the laboratory is typically restricted to authorized personnel.
5. **Training:** Personnel are trained in standard laboratory procedures and the safe handling of microorganisms used in BSL-1 labs.

BSL-1 labs are commonly found in educational institutions, including high schools and universities, where students may conduct introductory experiments involving harmless microorganisms. These labs are relatively low-risk environments, and they serve as an essential training ground for individuals learning basic microbiology and laboratory techniques.

It's important to note that higher biosafety levels, such as BSL-2, BSL-3, and BSL-4, are required for working with increasingly hazardous microorganisms and pose more stringent containment and safety requirements.

Note: Collecting and culturing random environmental samples requires much higher biosafety requirements than BSL-1 laboratories can provide. In other words, do not let your students conduct these types of experiments for any reason. They are very dangerous. These experiments will NEVER be approved.

2. **Human Subjects Research**

What is the definition of a human participant? According to the Code of Federal Regulation 45, CFR 46, *human participants are living individuals from whom researchers obtain data or samples through intervention or interaction or identifiable private information*.

Examples of projects that are considered "human participant research" include:

- Participants in physical activities (e.g., physical exertion, ingestion of any substance, any medical procedure)
- Psychological, educational and opinion studies (e.g., surveys, questionnaires, tests)
- Studies in which the researcher is the subject of the research.
- Testing of student designed invention, prototype or computer application by human participants other than student researcher
- Data/record review projects that include data that are not de-identified/anonymous (e.g., data set that includes name, birth date, phone number or other identifying variables)
- Behavioral observations that involve any interaction with the observed individual(s) or where the researcher has modified the environment (e.g., post a sign, place an object); occur in non-public or restricted access settings (e.g., day care setting, doctor's office); or involve the recording of personally identifiable information.

- Participation in research requires informed consent or assent, sometimes with parental permission. Adult participants may provide their own consent, while those under the age of 18 or unable to give consent (e.g., developmentally disabled individuals) must provide assent with parental/guardian permission.
- Students may use human subjects only when experiments are carried out under adult supervision.
- Student researchers must inform parents of potential participants of the experiment's conditions and provide them the option to opt their child out of participation.
- Student researchers cannot perform any experimentation on any human subjects without adhering to high school rules and form requirements for prior

approval. For any questions or assistance regarding the completion of appropriate ISEF forms, contact your Regional Fair Director.

- Each school must establish a Review Board (IRB) to evaluate and approve Human Subjects projects according to the IRB guidelines. For schools, an administrator, a science teacher (other than the project's sponsor), and a guidance counselor or nurse should convene as the IRB to review projects involving Human Participants. Questions regarding this process should be addressed with the Regional Fair Director well before the start of any experimentation or research.
- The School IRB will determine whether consent/assent/parental permission must be written or verbal. Informed consent ensures participants are fully informed of risks and benefits and that participation is voluntary with no coercion.
- When written parental permission is needed, **surveys must be attached** to the consent form.

3. Animal Behavior Studies

- There are limitations on the types of vertebrate animal projects that can be conducted. You are strongly encouraged to review the vertebrate animal section of the ISEF rules. Please contact your Regional Fair Director about any animal behavior studies before experimentation is allowed to begin.
- For grades K – 8, projects must be **non-invasive and non-intrusive behavioral/ observational** or **non-invasive and non-intrusive supplemental nutritional** studies.
- Proper care and treatment of the animal(s) are the responsibility of the researcher.
- **All research projects involving animal behavior must be reviewed and monitored by a veterinarian** to ensure safety for both the student and the animals. The cooperating veterinarian and IRB chair must sign-off on the ISEF Vertebrate Animal Form (5A) before the start of experimentation.
- Student researchers cannot perform any experimentation on vertebrate animals without adhering to high school rules and ISEF form requirements for prior approval. For any questions or assistance regarding the completion of appropriate ISEF forms, contact your Regional Fair Director.

Please keep these guidelines in mind when overseeing student research projects involving animals. They are designed to ensure safety and ethical standards are met. If you have any questions or need further information, don't hesitate to reach out to your Regional Fair Director for assistance.

PROJECTS THAT ARE NOT ALLOWED – NO EXCEPTIONS

1. **Radioactive Materials or Radiation-Emitting Equipment:**
    - These include materials or equipment that emit special kinds of energy called ionizing radiation.
2. **Hazardous Chemicals, Substances, and Activities:**
    - This category covers things like dangerous chemicals, DEA-controlled substances, tobacco, alcohol, prescription drugs, firearms, or explosives.
    - Students must read and cite the MSDS sheet for any chemical that is used in their experiments.
    - Hazardous activities are those that involve a level of risk above and beyond that encountered in the student's everyday life.
3. **Home Experiments with Microorganisms:**
    - This category includes projects that involve using or studying microorganisms like bacteria, viruses, prions, fungi, and parasites.
    - For grades 6-8, some of these projects may be done in school under the guidance of a trained teacher (see pg. 4 for details).
    - No bacterial studies are accepted from elementary school students (GRADES K-5), regardless of where the work was conducted.
4. **Research on Vertebrate Animals with Discomfort or Food/Water Restriction:**
5. **Animal Tissue Experiments**
    - Exceptions:
        - Fresh or frozen meat, meat by-products, pasteurized milk or eggs obtained from food stores, restaurants, or packing houses.
        - Hair, hooves, nails and feathers.
        - Teeth that have been sterilized to kill any blood- borne pathogen that may be present.
        - Fossilized tissue or archeological specimens.
        - Prepared fixed tissue
6. **Class IV Lasers:**
    - Powerful lasers (Class IV) should not be used in any elementary and middle school research. If you feel there is reason for an exception, the project must be approved by your Regional Fair Director prior to experimentation.

DISPLAY & SAFETY RULES

The Display and Safety Committee is here to make sure all participants meet the competition rules. We want to help you get ready for a fantastic science fair experience!

Getting Started with Display & Safety

- The Display & Safety inspection happens once you've set up your display completely.
- Fair leadership will provide advice on any Display & Safety concerns for project before judging begins.
- Sometimes, we might suggest a few changes to meet the Display & Safety rules. If there are persistent issues, a committee, which could include fair leadership and SRC members, may step in to help out.

Rules for Your Project's Display

- Your project's size can't be larger than these dimensions:
    - Depth (front to back): 18 inches or 38 centimeters
    - Width (side to side): 48 inches or 122 centimeters
    - Height (floor to top): 108 inches or 274 centimeters

Note: Due to space constraints at the Tri-State Science and Engineering Fair, these dimensions are different from the dimensions you can expect at HSEF.

Tips for Setting Up Your Display

- When you order posters or materials, make sure they fit within these size limits.
- Everything related to your project, including supporting materials, should fit within these dimensions, including table covers.
- Tables provided by the fair will be no taller than 36 inches (91 centimeters).
- If you use a table, it's considered part of your project, so it should meet the size limits.
- You will not be able to attach anything to or lean anything against walls or other supporting structures in the exhibit hall. In other words, your project must be free-standing and self-supported.
- All demonstrations should happen inside your booth space. When not in use, your project components should stay within the allowed dimensions mentioned above.
- After the judging session concludes, all loose piece and equipment should be removed from your exhibit space.
- While you can continue your project under the table, please don't use this space for storage.

FORMS

Flow Chart Tool – Flow charts have been created to help you navigate the number and types of forms needed for projects involving human subjects, potentially hazardous biological agents, and animals. These flow charts can be found on pages 19 – 26 of this handbook.

Abstract

- This is a concise summary of the project’s research and findings (~250 words)

- Everyone needs to display this.
- We recommend not using the word "abstract" anywhere else on your display.

Where to display the abstract.

- Right at the front of the table, or
- On the display board, or
- In a neat acrylic frame on the table or on the floor (if no table is used).

How to write an abstract.

1. **Start with a Clear Purpose:** Begin by stating the purpose of your project. Why did you conduct this experiment? What question were you trying to answer? Be concise but clear.
2. **Describe Your Experiment:** Briefly explain the experiment you conducted. What methods or procedures did you use to investigate your question? Avoid getting into too much detail; just give a general overview.
3. **Highlight Key Variables:** Mention the variables you manipulated (independent variables) and the ones you measured (dependent variables). If applicable, include any controlled variables that you kept constant.
4. **Share Your Results:** Summarize the main results or outcomes of your experiment. What did you discover? Did your data support your hypothesis? Use quantitative data if possible (numbers, measurements).
5. **Conclude and Reflect:** Offer a brief conclusion. What did you learn from your experiment? Were there any unexpected results or patterns? Reflect on the significance of your findings.
6. **Keep It Short and Concise:** Remember that an abstract should be brief, typically no more than 250 words. Every word should count, so be concise and to the point.
7. **Use Clear and Simple Language:** Avoid jargon or technical terms that might be confusing to readers who are not familiar with your topic. Use plain language that a general audience can understand.
8. **Proofread and Edit:** Carefully proofread your abstract for grammar, spelling, and clarity. Ask a teacher, parent, or peer to review it for feedback.

Sample Abstract (for a science fair project on plant growth):

> *"The purpose of this experiment was to investigate the effect of different types of light on the growth of bean plants. Three groups of bean plants were exposed to different light conditions: group A received natural sunlight, group B received artificial LED light, and group C was kept in the dark. Over a period of four weeks, we measured the height of the plants and counted the number of leaves. Our results showed that the plants in group A (natural sunlight) grew the tallest and had the most leaves, while group C (in the dark) showed the least growth. These findings suggest that the type of light has a significant impact on plant growth, with natural sunlight being the most*

favorable. This experiment helps us better understand the factors that affect plant growth and may have practical applications in agriculture."

Forms Not for Display

- ISEF forms needed for projects involving microorganisms, animals, and human participants, don't need to be displayed.
- Keep these forms handy in your booth in case a judge asks for them.

Special Note on Human Participant Forms

- Completed informed consent/assent forms for human participant studies should NOT be displayed and should NOT be at the project booth.
- Students can include a sample (incomplete) form in their logbook or research notebook, but the completed forms should never be in the Exhibit Hall.

GUIDELINES FOR PHOTOGRAPHS AND DISPLAY ITEMS

Photograph and Image Rules

1. You can use photographs, visual images, charts, tables, and graphs as long as they meet these conditions:
    - They shouldn't be offensive or inappropriate.
    - Each image should have a credit line saying who took it or where it's from. If all the images come from the same source, one credit line is enough.
    - Make sure to properly cite all images, including those in the background and any images of people for whom you have a signed photo/video release form. Keep these signed forms in a notebook or logbook at the project booth and have them ready if someone asks during setup and inspection.

2. If your students are using any kind of presentation or demonstration outside of the project board (like PowerPoint, Prezi, or software simulations), it is your responsibility to ensure that it does not contain offensive or inappropriate material.

Items and Materials Not Allowed

1. Here's a list of what shouldn't be on display or at the project booth:
    - No self-promotion or external endorsements, like commercial logos, institutional crests, or trademarks.
    - Don't mention institutions or mentors that supported the research, except for an acknowledgment section on the poster.
    - Avoid any reference to the project's patent status, if applicable.

- Don't hand out items like disks, CDs, brochures, or food to judges or the public.

2. Keep awards and medals out of sight.

3. Don't include postal addresses, web addresses, email, social media, QR codes, phone or fax numbers in the project display or booth. The only personal info allowed is what's on the abstract.

4. Active internet or email connections as part of the project's operation are not allowed.

SAFETY GUIDELINES

Not Allowed at the Project or Booth

Note: In the case in which a student's project includes an item that is prohibited from display, please consider taking photographs and/or documenting the significance of the prohibited item through video.

1. No living organisms, including plants.
2. No glass.
3. No soil, sand, rocks, cement, or waste samples, even if they're in acrylic slabs.
4. No taxidermy specimens or parts.
5. No preserved vertebrate or invertebrate animals.
6. No human or animal food.
7. No human or animal body fluids (like blood or urine).
8. No unprocessed plant materials.
9. No chemicals, including water. No liquids in the project display.
10. No hazardous substances or devices (e.g., poisons, drugs, firearms).
11. No items that may have had contact with hazardous chemicals unless professionally cleaned and documented.
12. No sharp items (syringes, needles, knives).
13. No flames or highly flammable materials.
14. No batteries with open-top cells or wet cells; they can't stay overnight.
15. No drones or flight-capable devices unless the power source is removed.
16. No 3D printers unless the power source is removed.
17. No apparatus capable of producing dangerous temperatures.
18. No apparatus with belts, pulleys, chains, or moving parts without proper shielding.
19. No distracting display items (like sounds, lights, or odors).
20. No personal items or packing materials under the table or in the booth overnight.
21. No apparatus or project materials deemed unsafe by the committees.

Electrical Regulations

1. Electrical power supplied is 120 or 220 Volt, AC, single phase, 60 Hz. No multi-phase allowed.
2. Electrical devices must be enclosed and non-combustible. Metal parts must be grounded.
3. Wiring, switches, and metal parts must have insulation and over-current safety devices. These components must be inaccessible to anyone but the exhibitor. Exposed electrical equipment or metal that may be energized must be shielded with a non-conducting material or with a grounded metal box to prevent accidental contact.
4. Decorative lighting is discouraged, but if used, it must be low-voltage LED lighting that doesn't generate heat. When student is not at the exhibit, all electrical power must be disconnected, or power bars must be switched off (Exception: during pre- judging audio visual displays may be available.
5. An insulating grommet is needed where wires enter enclosures.
6. No live circuits over 36 volts are allowed.
7. There must be a visible on/off switch to disconnect from the power source.

Laser Regulations

- Class 1, Class 2, Class 3A, or Class 3R lasers are allowed but must be used responsibly.
- Laser beams can't pass through magnifying optics.
- Lasers must have manufacturer labels for power inspection.
- Handheld lasers are not permitted.
- Lasers will be confiscated with no warning if not used safely.

Poster Rules

- Posters must represent the student's work from this school year.
- Parents and teachers can help check grammar and spelling.

Understanding Different Project Types

1. Experimental Projects
    - Begin with a scientific question.
    - Change a variable and observe the effects.
    - Must include a control group for comparison.
    - Use repeated trials or large sample sizes to reduce errors and improve results' reliability.

2. Descriptive Studies
    - Compare different groups, similar to experimental projects.
    - Lack a control group.

- Example: Comparing the amount of sea grass in a protected area versus areas visited by boaters.

3. Engineering/Design Projects
    - Focus on redesigning or improving existing processes or devices.
    - May involve combining devices for new purposes.
    - Follows engineering goals, not scientific questions/hypotheses.

4. Product Testing Projects
    - Typically not accepted as scientific studies but may be appropriate for lower grades. Check with your Regional Fair Director.

<u>The Research Paper (Grades 6-8)</u>

Here's a recommended format for organizing and writing the research paper:

- **Title Page:** Includes project title, researcher's full name, and date submitted.
- **Purpose/Question:** States the scientific question the project aims to answer in an "If...then" format. For engineering/design studies, the problem they are addressing should be stated.
- **Variables, Constants, and Control:** Lists manipulated and responding variables, constants, and the control group.
- **Research Section:** Provides background information on the topic, related scientific principles, and key vocabulary. Students should find sources that provide information regarding the problem they are studying or working to solve. Use your own words and cite sources. (3-4 pages)
- **Hypothesis:** States the project's purpose, why you chose it, and your prediction about how changing the variable will affect the responding variable or the outcomes of the design for engineering studies.
- **Materials List/Procedures (Experimental Design):** Lists materials used and provides detailed step-by-step procedures, including safety protocols. (1-2 pages)
- **Data & Graphs:** Organizes collected data into charts, tables, and graphs, using the metric system. Use line graphs whenever possible.
- **Conclusion:** Discusses the hypothesis, data, problems encountered, and what you've learned from the project. Follow a three-paragraph format to ensure the conclusion is thorough.
    - *Paragraph One:* Discusses the hypothesis and data. Restate the hypothesis and decide if the data supported this statement or did not support it. Retell the data using the numbers, and/or your analysis of the numbers such as the mean, median or mode. State your inference concerning why the data turned out the way it did.

- *Paragraph Two:* Discusses problems or concerns you had during the experiment. Include new ideas that came to you that you might use as the basis of a science project in the future, or ways to change this idea to use in the future.
- *Paragraph Three:* States what you learned as the result of this project. Include any observations you made as to how this information can be applied to real life.

- **Works Cited:** Documents all sources used in your research, following MLA or APA style.

Project Categories

The categories listed below are those used at USI's Tri-State Science and Engineering Fair (TSEF). The State Fair (HSEF) will use categories different than these. Please check with your fair(s) for the appropriate category listings at each level of competition. Depending on the quantity and variety of projects registered to compete at the TSEF, students may be judged in grade level pods or in categorical pods.

Category Selection Advisement:
Many projects could easily fit into more than one category. It is your decision to choose the category that most accurately describes your project. The categories for the Tri-State Science and Engineering Fair are as follows.

Animal Sciences
Behavioral & Social Sciences
Chemistry
Earth & Environmental Sciences
Energy: Physical and Chemical
Engineering
Mathematics
Medicine and Health Science
Microbiology and Molecular/Cellular Biology
Physics & Astronomy
Plant Sciences
Robotics, Computers, and Systems Software

Selecting a Category:

Ask yourself the following questions to help in the selection of a category:

1. Who will be the most qualified to judge my project? What area of expertise is the most important for the judge to have? (For example, a medical background or an engineering background?)

2. What is the emphasis of my project? What characteristic of my project is the most innovative, unique, or important? (For example, is it the application in medicine or the engineering of the machine? Is it inserting the proper gene or the method of computer mapping to demonstrate the results?)

Regional Fairs in Indiana	
East Central Indiana Regional Science Fair	Ball State University
Lafayette Regional Science Engineering Fair	Purdue University
Northeastern Indiana Regional Science Fair	Purdue University at Fort Wayne
Northeastern Indiana Tri-State Regional Science Fair	Trine University
Northern Indiana Regional Science & Engineering Fair	Notre Dame
Tri-State Science & Engineering Fair	University of Southern Indiana
West Central Indiana Science & Engineering Fair	DePauw University
Central Indiana Regional Science & Engineering Fair	Marian University

FOR SPECIFIC DATES AND TIMES OF THESE FAIRS VISIT,

www.sefi.org

Look under the link “Regional Fair” for your region.

Indiana Junior Division Project Form

Last Name:	**First Name**		***Grade***	
Email Address:	**Phone:**	**Gender**		
School Name		**School City**	**State**	**Zip**
School Phone:		**Teacher Approval:**		
		By signing here the Teacher has approved this project plan:		
Teacher Name	**Teacher Email**			
		_____ Teacher Signature & Date		

Is this a Team Project? _____No *(if yes complete top section of form for each team member)*

Project Proposal:

In the boxes provided describe the project you want to do for science fair.

Question:

Hypothesis:

Experimental Method: (*Attach separate pages if needed)*

References:

(1)

(2)

If you marked yes to any of the items at the bottom of page one, answer the appropriate questions below in the space provided. Your teacher may have you answer additional questions before giving approval.

Does this project use any of the following items?

____Human Subjects* _____Animals* _____Bacteria, Yeast, DNA or other Pathogens*

_____Chemicals _____Hazardous Substances _____Hazardous Equipment

HUMAN SUBJECTS PROJECT (REQUIRES SRC APPROVAL AND ISEF FORMS)

1. If you are doing a survey or test involving humans or animals describe in detail what you are doing.
    a. Are there any possible risks involved for the test subjects?
    b. If yes, how will you prevent injury?
2. If you are using Humans, you must share your research plan with the parents of test subjects under 18 years old and have them give you permission to use their child in your research.

VERTEBRATE ANIMAL PROJECT (REQUIRES SRC PRIOR APPROVAL, ISEF FORMS, AND A VETERINARIAN TO MONITOR)

1. If you are using animals, you must have this plan reviewed by a veterinarian or other trained person for animal safety.
2. What safety procedures will you use while experimenting?

<u>BACTERIA, YEAST PROJECTS</u> ***(ONLY GRADES 6-8 MAY CONDUCT THESE PROJECTS AND NEVER AT HOME. REQUIRES SRC PRIOR APPROVAL AND ISEF FORMS)***

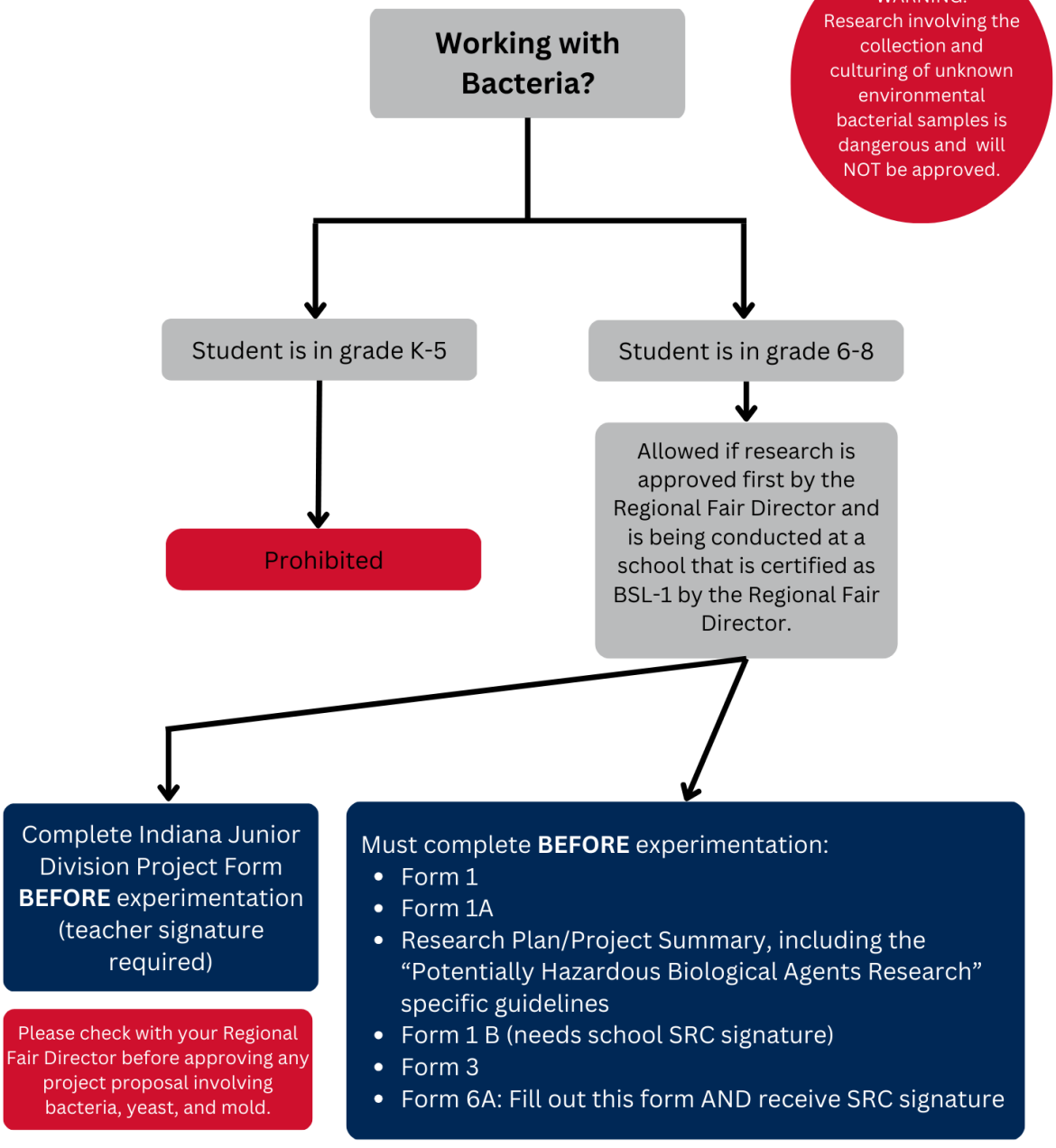
1. List in detail what items you will be studying and where you will get them. (All of these studies must be done under the supervision of a trained adult in a high school or certified lab.)
2. How will you dispose of your organisms after your research?
3. What safety procedures will you use while experimenting?

<u>CHEMICALS/HAZARDOUS SUBSTANCES/HAZARDOUS EQUIPMENT</u>

(REQUIRES QUALIFIED SUPERVISION AND ISEF FORM 2(QUALIFIED SCIENTIST) AND FORM 3 (RISK ASSESSMENT FORM)

1. List all chemicals, substances, and equipment that you will be using for your experiment.
2. From where will you get each of these items?
3. What safety procedures will you use while experimenting?

Elementary and Middle School Projects Rules Flow Chart



Elementary and Middle School Projects Rules Flow Chart

Does your project involve <u>humans</u> besides yourself?

surveys, physical activity, observing behaviors, using another human to test a protoype/computer program, etc.

Must complete **BEFORE** experimentation:

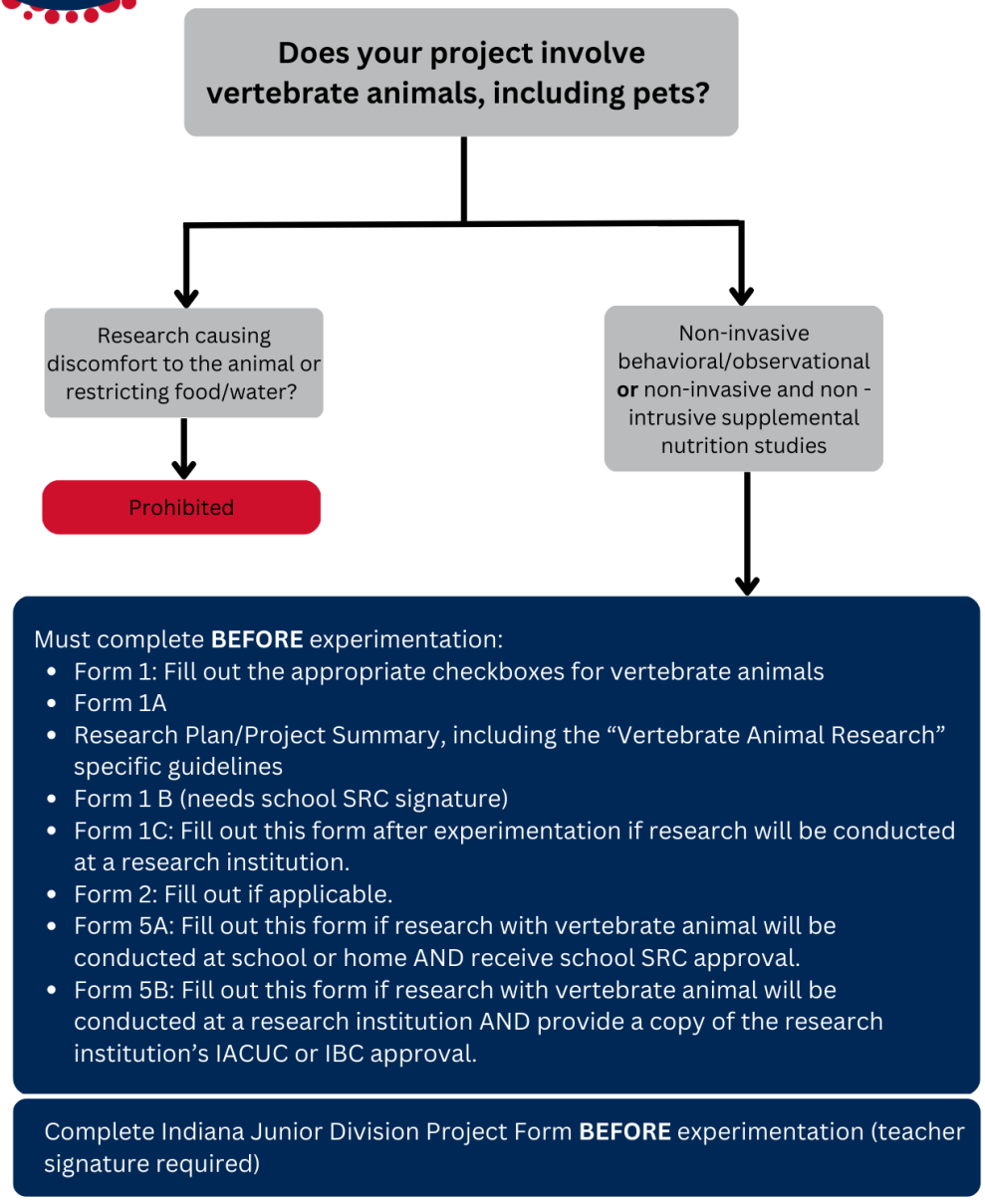
- Form 1: Fill out the appropriate checkboxes for Human participants
- Form 1A
- Research Plan/Project Summary, including the "Human Participants Research" specific guidelines
- Form 1 B (needs school SRC signature)
- Form 4 **<u>AND</u>** receive school SRC approval
- Human Informed Consent Form

Complete Indiana Junior Division Project Form **BEFORE** experimentation (teacher signature required)

If you need more guidance regarding the forms needed for a project, use the ISEF Rules Wizard or contact your Regional Fair Director prior to project approval.

https://ruleswizard.societyforscience.org

Elementary and Middle School Projects Rules Flow Chart



High School Projects Rules Flow Chart

ALL High School Projects must have the following forms completed, signed, and uploaded into the SEFI registration site.

- **Form 1: Checklist for Adult Sponsor/Safety Assessment Form** *(Completed by the sponsoring teacher after they have reviewed the student's completed Form 1A Checklist, Research Plan/Project Summary, and has determined the project's required forms.)*
- **Form 1A: Student Checklist** *(Be sure that the date you put for the start of experimentation is AFTER the date of project approval on Approval Form 1B.)*
- **Form 1B: Approval Form** (Box 1 must be completed. Box 2a or 2b should be completed if the project involves human subjects, vertebrates, or potentially hazardous biological agents.)

If you need more guidance regarding the forms needed for a project, use the ISEF Rules Wizard or contact your Regional Fair Director prior to project approval.

https://ruleswizard.societyforscience.org

High School Projects Rules Flow Chart

Does your project involve <u>humans</u> besides yourself?

surveys, physical activity, observing behaviors, using another human to test a protoype/computer program, etc.

Must complete **BEFORE** experimentation:

- Form 1: Fill out the appropriate checkboxes for Human participants
- Form 1A
- Research Plan/Project Summary, including the "Human Participants Research" specific guidelines
- Form 1B (needs school SRC signature)
- Form 1C: Fill out this form after experimentation if research will be conducted at a research institution.
- Form 2: Fill out if applicable.
- Form 3: Fill out if applicable.
- Complete Form 4 **<u>AND</u>** receive school SRC approval
- Human Informed Consent Form, if applicable

All forms can be found at https://www.societyforscience.org/isef/forms/

High School Projects Rules Flow Chart

Does your project involve vertebrate animals, including pets?

WARNING:
In most cases, a veterinarian will need to be extremely involved in any research involving vertebrate animals. Consider using invertebrates or computer simulation software instead.

- Research negatively affects the animal's health or well-being. → Prohibited
- Non-invasive behavioral/observational **or** non-invasive and non-intrusive supplemental nutrition studies

Must complete **BEFORE** experimentation:

- Form 1: Fill out the appropriate checkboxes for vertebrate animals
- Form 1A
- Research Plan/Project Summary, including the "Vertebrate Animal Research" specific guidelines
- Form 1 B (needs school SRC signature)
- Form 1C: Fill out this form after experimentation if research will be conducted at a research institution.
- Form 2: Fill out if applicable.
- Form 5A: Fill out this form if research with vertebrate animal will be conducted at school or home AND receive school SRC approval.
- Form 5B: Fill out this form if research with vertebrate animal will be conducted at a research institution AND provide a copy of the research institution's IACUC or IBC approval.

All forms can be found at
https://www.societyforscience.org/isef/forms/

High School Projects Rules Flow Chart

Does your project involve potentially hazardous biological agents?

Examples: bacteria, viruses, viroids, prions, rickettsia, fungi, parasites, recombinant DNA technologies, human or animal (including cell lines and tissue cultures), blood, or body fluid

Must complete **BEFORE** experimentation:

- Form 1: Fill out the appropriate checkboxes for potentially hazardous biological agents.
- Form 1A
- Research Plan/Project Summary, including the "Potentially Hazardous Biological Agents Research" specific guidelines
- Form 1B (needs school SRC signature)
- Form 1C: Fill out this form after experimentation if research involving any of the above agents will be conducted at a research institution.
- Form 2: Fill out if applicable
- Form 3
- Form 6A: Fill out this form AND receive SRC signature
- Form 6B: Fill out this form along with Form 6A if using human/vertebrate animal tissue, such as cell lines or tissue culture. If tissue comes from a vertebrate animal study conducted at a research institution, a copy of the research institution's IACUC approval also needs to be provided.

Please see SEFI Rules regarding additional rules for...

- studies involving unknown microorganisms (BSL-1)
- projects involving recombinant DNA (rDNA) technologies
- projects with tissues and body fluids
- exempt studies (no SRC pre-approval needed) (i.e., microbial fuel cells, coliform water test kits, research involving manure, protists, and archaea)
- BSL-1 organisms that are exempt from prior SRC review and require no additional forms, such as baker's yeast, brewer's yeast, Lactobacillus, Bacillus thuringiensis, nitrogen-fixing, oil-eating bacteria, algae-eating bacteria, water soil microbes, mold growth, slime molds, edible mushrooms, and E. coli K-12.

https://www.societyforscience.org/isef/international-rules/potentially-hazardous-biological-agents

High School Projects Rules Flow Chart

Does your project involve hazardous chemicals, activities, or devices?

Examples: lasers, radiation, DEA-controlled substances, prescription drugs, etc.

Must complete **BEFORE** experimentation:

- Form 1: Fill out the appropriate checkboxes for hazardous chemicals, activities, and devices.
- Form 1A
- Research Plan/Project Summary, including the "Hazardous Chemicals, Activities, and Devices Research" specific guidelines
- Form 1B (needs school SRC signature)
- Form 1C: Fill out this form after experimentation if research involving any of the above elements will be conducted at a research institution.
- Form 2: Fill out if applicable
- Form 3

Rules for the use of hazardous chemicals, activities, and devices in research can be found at: https://www.societyforscience.org/isef/international-rules/hazardous-chemicals-activities-or-devices/

All forms can be found at https://www.societyforscience.org/isef/forms/