2020 Rule Changes

- All students who are part of a team completing a project together must attend grades which are assigned to the same division.
- Projects involving the consumption, ingesting, tasting, applying, absorbing of any substance will now be permitted at Covestro PRSEF with the approval of the local IRB and of the Covestro PRSEF SRC.
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2020 Science Fair

November 15, 2019  Deadline for Covestro PRSEF School Registration
November 29, 2019  Deadline for pre-approval of Covestro PRSEF projects using Human Participants, Non-Human, Vertebrate Animals, Potentially Hazardous Biological Agents, and Hazardous Chemicals, Activities and Devices
January 3, 2020  Deadline for Covestro PRSEF paperwork for all other projects
February 7, 2020  Deadline for schools with a school science fair paperwork
March 25, 2020  Covestro PRSEF Competition Day, 7:00 a.m. - 4:00 p.m. – Carnegie Science Center
March 26, 2020  Covestro PRSEF Awards Celebration, 6:00 p.m. - 8:30 p.m. – Carnegie Music Hall, Oakland
The Covestro Pittsburgh Regional Science & Engineering Fair (Covestro PRSEF) is affiliated with the International Science & Engineering Fair (ISEF). Therefore, the International Rules for Pre-College Science Research are applied to all projects submitted to Covestro PRSEF. The complete rules are available at https://student.societyforscience.org/international-rules-pre-college-science-research from the Society for Science & the Public’s website.

This guidebook along with the document mentioned above will answer most questions and cover the details and requirements for students to compete at Covestro PRSEF. You should also reference the Teachers’ and Students’ Handbook at http://www.carnegiesciencecenter.org/stemcenter/stemcenter-science-fair-teachers-and-students/. Should you still have questions, please contact us at 412.237.1534 or PRSEF@CarnegieScienceCenter.org.

On competition day, students will display their presentation boards and discuss their research with scientists and engineers. Sponsor and other special awards are presented on competition day, March 25, 2020. Category, Scholarship, Perseverance, and ISEF award winners will be announced at the Awards Celebration, March 26, 2020.

Thank you to all of the teachers, parents, and volunteers for your long hours of dedication in helping our young scientists and engineers to explore their world through hands-on science research. Without you, Covestro PRSEF would not exist. These young scientists and engineers are our future. Thanks for your commitment to our future.

2020 Deadlines and Changes

Rules and guidelines for conducting research were developed with the intent to do the following:

- protect the rights and welfare of the student researcher and human subjects
- protect the health and well-being of vertebrate animal subjects
- follow federal regulations governing research
- use safe laboratory practices
- protect the environment

2020 School and Student Registration Deadlines:

- School Registration and Fee - November 15, 2019; Schools must register online.
- Human Subjects/Non-Human Vertebrate Animals/Potentially Hazardous Biological Agents and Hazardous Chemicals, Activities and Devices - Pre-approval is required; paperwork is due on or before November 29, 2019.
- All other student registration forms are due January 3, 2020.
- School Fairs - Special arrangements can be made for schools that have school science fairs. However, final student registration forms for schools with their own fair must be submitted online by February 7, 2020.
- Students wishing to compete in the International Science and Engineering Fair (ISEF) must submit a separate application (see page 12). The application form and required ISEF research papers must be submitted by February 28, 2020.

Reminder: Teachers/Adult Sponsors - All teachers and/or adult sponsors must review the PRSEF scientific review committee most common problems document. It provides important information on common paperwork problems and how to solve them. This document must be reviewed by every teacher and/or adult that supervises a student at Covestro PRSEF. Please see www.pittsburghsciencefair.org for more information.
The following will summarize which forms are required for different types of projects. All student registration forms must be submitted online by January 3, 2020. However, projects involving Human Participants, Non-Human Vertebrate Animals, Potentially Hazardous Biological Agents and Hazardous Chemicals, Activities and Devices require approval prior to beginning research and must be submitted on or before November 29, 2019.*

Forms required for ALL STUDENTS
• Form 1 — Checklist for Adult Sponsor
• Form 1A — Student Checklist
• Research Plan (Must include detailed description of research and at least five (5) references)
• Form 1B — Approval Form
• Student Registration Form
• Abstract (abstracts must be submitted online on or before February 7, 2020)

All required forms can be accessed online at www.pittsburghsciencefair.org.

Many student researchers require additional forms. The following chart indicates which additional forms are required:

<table>
<thead>
<tr>
<th>Non-Human Vertebrate Animals*</th>
<th>Forms 1, 1A, Research Plan, 1B, Student Registration Form and</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Form 2 — Qualified Scientist and</td>
</tr>
<tr>
<td></td>
<td>Form 5A — Vertebrate Animal Form (if conducted in a school, home or field research site), OR</td>
</tr>
<tr>
<td></td>
<td>Form 5B — Vertebrate Animal Form (if conducted in a Regulated Research Institution)</td>
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<tr>
<td></td>
<td>If applicable:</td>
</tr>
<tr>
<td></td>
<td>Form 1C — Regulated Research Institution/Industrial Setting Form (if conducted in a Regulated Research Institution)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Human Participants*</th>
<th>Forms 1, 1A, Research Plan, 1B, Student Registration Form and</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Form 4 — Human Subjects Form with applicable consents and surveys</td>
</tr>
<tr>
<td></td>
<td>If applicable:</td>
</tr>
<tr>
<td></td>
<td>Form 1C — Regulated Research Institution/Industrial Setting Form (if conducted in a Regulated Research Institution)</td>
</tr>
<tr>
<td></td>
<td>Form 2 — Qualified Scientist (required if more than minimal risk is involved)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Potentially Hazardous Biological Agents*</th>
<th>Forms 1, 1A, Research Plan, 1B, Student Registration Form and</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Form 2 — Qualified Scientist, and</td>
</tr>
<tr>
<td></td>
<td>Form 6A — Potentially Hazardous Biological Agents</td>
</tr>
<tr>
<td></td>
<td>If applicable:</td>
</tr>
<tr>
<td></td>
<td>Form 1C — Regulated Research Institution/Industrial Setting Form (if conducted in a Regulated Research Institution)</td>
</tr>
<tr>
<td></td>
<td>Form 3 — Risk Assessment</td>
</tr>
<tr>
<td></td>
<td>Form 6B — Human and Vertebrate Animal Tissue Form (for all studies involving tissues and body fluids.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous Chemicals, Activities or Devices (includes DEA-controlled substances, prescription drugs, alcohol and tobacco, firearms and explosives, radiation, lasers, etc.)*</th>
<th>Forms 1, 1A, Research Plan, 1B, Student Registration Form and</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Form 3 — Risk Assessment</td>
</tr>
<tr>
<td></td>
<td>If applicable:</td>
</tr>
<tr>
<td></td>
<td>Form 1C — Regulated Research Institution/Industrial Setting Form (if conducted in a Regulated Research Institution)</td>
</tr>
<tr>
<td></td>
<td>Form 2 — Qualified Scientist</td>
</tr>
</tbody>
</table>

Still unsure on what forms are required? Visit https://apps2.societyforscience.org/wizard/index.asp, click ISEF Rules Wizard. Please contact the Covestro PRSEF office at 412.237.1534 with any questions.

*Requires Covestro PRSEF SRC/IRB approval prior to experimentation. For Human Participants, approval from the school’s IRB on Form 4 and informed consent from participants are also required.

page 2
RULES OF PARTICIPATION

These rules are intended to protect the student researcher by ensuring that the proper supervision is provided and that all potential risks are considered so that the appropriate safety precautions are taken.

- Scientific fraud and misconduct are not condoned at any level of research or competition. This includes 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. Covestro PRSEF reserves the right to revoke recognition of a project subsequently found to have been fraudulent.
- The student must be less than 21 years of age as of May 1, 2020.
- The student must live in one of the following counties: PENNSYLVANIA: Allegheny, Armstrong, Beaver, Bedford, Blair, Butler, Cambria, Clarion, Clearfield. Fayette, Greene, Indiana, Jefferson, Lawrence, Mercer, Somerset, Venango, Washington, Westmoreland; MARYLAND: Garrett.
- The Covestro Pittsburgh Regional Science & Engineering Fair is the ONLY science fair in western PA which is affiliated with ISEF. Students may compete in only one ISEF affiliated science fair per school year.
- The project must be solely the work of the exhibitor(s) in research, construction and design of the exhibit. Parents or sponsors may only advise. (Adult supervision and assistance with the use of power tools are recommended).
- Team Projects (2 or 3 students) are permitted in all divisions. All team members must attend grades which are assigned to the same division. For example, a sixth grader (junior division) cannot work with a seventh grader (intermediate division). All team members must be present on fair day to compete.
- Each student MUST have an adult sponsor (parent/teacher/mentor) who is ultimately responsible for the health and safety of the student conducting the research and of any human or animal subjects. An adult sponsor may be a teacher, parent, university professor or scientist who has a solid background in science and will closely supervise the student’s research.
- All students (in all divisions) conducting research involving vertebrate animals, human subjects, tissue, recombinant DNA, microbes, and potentially hazardous biological agents or hazardous chemicals, activities or devices, MUST have their research approved BEFORE starting the project. Please visit https://student.societyforscience.org/isef-forms for additional information and requirements.
- Human Participant Studies - Projects involving consuming, ingesting, tasting, applying, and/or absorbing of any substance will be accepted with the approval of both the school’s Institutional Review Board (IRB) on Form 4 and of the Covestro PRSEF Scientific Review Committee (SRC). Research completed at a Regulated Institution and approved by the institution’s IRB on Form 4 does not need PRSEF SRC approval.
- Bacteria/Mold Research - Many students collect bacteria in a home environment. This is acceptable as long as the collected bacteria are immediately transported to a laboratory with the appropriate level of biosafety containment and petri dishes remain sealed. (See https://student.societyforscience.org/isef-forms).
- Students MUST set up their own exhibit at Covestro PRSEF for project inspection. If parents or teachers are present in the exhibit area during set up or category judging, the student will be disqualified.
- Students MUST be present at their project boards during the official judging time on fair day. The exhibit area is a restricted area during official judging. ONLY students, judges, and official Covestro PRSEF volunteers/staff are permitted on the exhibit floor during judging times.
- All students must remove their project boards from the exhibit area when they leave on fair day. Remaining projects will be discarded due to space limitations.
- Any student leaving early MUST have completed the early dismissal form and have approval from the Covestro PRSEF staff. Visit www.pittsburghsciencefair.org for the early dismissal policy.
TIPS FOR TEACHERS

- **Institutional Review Board (IRB) - Human Participant Studies** - Schools are asked to form a school IRB to evaluate the potential physical and/or psychological risk of research involving humans. The student must obtain signatures from the school IRB on Form 4 prior to submitting paperwork to Covestro PRSEF. Incomplete forms will be returned to the school. See page 4-10 of the 2020 Rules and Guidelines, https://student.societyforscience.org/isef-forms. Covestro PRSEF’s SRC must give the final approval for all projects submitted to the competition.

- **A Scientific Review Committee (SRC) within the school is recommended** to support the teacher in reviewing students’ research plans. Proper review of students’ research plans will eliminate the risk of a student being disqualified from participation in Covestro PRSEF. Covestro PRSEF’s SRC reserves the right of final approval of all projects submitted to the competition.

- **Teachers and/or Adult Sponsor** - All teachers and/or adult sponsors must review the Covestro PRSEF Scientific Review Committee’s most common paperwork problems document prior to submitting students’ paperwork. Visit the Covestro PRSEF website at www.pittsburghsciencefair.org to learn more.

- **Required registration forms** - Forms 1, 1A, Research Plan (see research plan instructions on page 2 of 1A), and 1B are required for all projects. Other forms may also be required. See page 2 Required Registration Forms or visit the ISEF forms wizard at https://apps2.societyforscience.org/wizard/index.asp. Teachers must also submit the student registration form online by January 3, 2020. An abstract (250 words or less) for each project must be submitted online on or before February 7, 2020.

- The deadline for submission of all registration forms at schools without their own science fair is January 3, 2020. However, projects involving Human Participants, Non-Human Vertebrate Animals, Potentially Hazardous Biological Agents and Hazardous Chemicals, Activities and Devices require approval prior to beginning research and must be submitted on or before November 29, 2019.

- Students’ research plans MUST include a detailed description of the methods or procedures involved in their projects (list all materials, chemical concentrations, drug dosages, etc.). The procedure should be clear to the reviewer.

- Research plans must list at least five (5) major references (e.g. science journals, books, articles, internet sites etc.) All references must be well documented and formatted in a standard recognized format (APA, MLA etc). Uris alone are not acceptable as references.

- Check all forms for completion. Signatures on ALL forms (except 1C, if applicable) must be obtained prior to the start of the student’s experimentation. Note: Form 1 must be approved after Form 1B. Form 1B approval must be before Form 1A experimentation dates.

- **Form (3) Risk Assessment Form** is required for projects using hazardous chemicals, activities or devices or regulated substances and some potentially hazardous biological agents. The rules include substances and devices that are regulated by local, state, country or international law, most often with restrictions of their use by minors such as DEA-controlled substances, prescription drugs, alcohol and tobacco and firearms and explosives. Hazardous activities are those that involve a level of risk above that in the student’s everyday life.

- Conducting experiments which pose a threat to the safety and welfare of animals (such as feeding them human food or placing the animal in an unsafe or unethical environment) are prohibited. Please visit https://student.societyforscience.org/isef-forms, 2020 Rules and Guidelines, page 11, for additional rules regarding animal research.

- **Photographs and/or visual depictions** are permitted on the display board IF: a. they are not deemed offensive or inappropriate by Covestro PRSEF; b. they include credit lines of their origins (“Photographs taken by...” or “Image taken from ”...”); c. they are from the internet, magazines etc., and credit lines are attached; d. they are photographs of the student researcher; e. they are photographs of human participants for whom consent forms were obtained. NOTE: Photographs or visual presentations depicting vertebrate animals in surgical techniques, dissections or other lab procedures are not permitted.
**CATEGORIES**

You will select a category and Individual/Team project online when registering students.

We reserve the right to modify categories based on the number of projects per category.

**JUNIOR DIVISION** (Grade 6)

**Behavioral & Consumer Sciences:** These projects will explore consumer products and the science of how people respond to the world around them. The areas include:

- **Behavioral Science Related:** psychology, human and animal behavior, learning and perception, educational and testing, surveys
- **Consumer Related:** consumer product testing, consumer product design and enhancements, comparisons and evaluation of commercially available products

**Biological Sciences:** These projects will explore living things, including plants, animals and humans, and the things which affect them. The area includes: biology, botany & zoology, nutrition, photosynthesis, allergies, plant growth, exercise, biochemistry, studies of animal/human health, genetics & inherited traits

**Chemistry:** These projects will explore chemistry, which includes study of any kinds of chemicals. These areas include: organic & inorganic chemistry, chemical compounds, household chemicals (chemistry focus, not functional emphasis), chemical engineering. Note: If the project focuses on the biological impact/effect of the chemical, then the project should be placed in the biological sciences category.

**Physical Sciences & Engineering:** These projects will explore physics which includes our mechanical world, and engineering, which includes building things and solving problems.

- **Physics Related:** states of matter, optics and photography, sound and acoustics, heat, cold and thermal conductivity, pressure and vacuum, electricity and magnetism, friction, inertia, gravity, density
- **Engineering Related:** mechanical engineering, transportation, buildings and bridges, planes, trains, boats and cars, sports, robotics, computers, energy production, conversion and storage, alternative energy, such as wind and solar

**INTERMEDIATE DIVISION** (Grades 7 & 8)

**Behavioral and Social Science:** human and animal behavior, social and community relationships – psychology, sociology, anthropology, archaeology, ethology, ethnology, linguistics, learning, perception, urban problems, reading problems, public opinion surveys, educational testing, etc.

**Biology:** botany, zoology, genetics, biochemistry, including hormones, molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry, etc.

**Chemistry:** inorganic, organic, physical materials, plastics, fuels, pesticides, metallurgy, etc.

**Computer Science/Math:** development of computer hardware, software engineering, internet, simulations, statistics, calculus, geometry, abstract algebra, number theory, probability, etc.

**Consumer Science:** consumer product testing and design.

**Earth/Environment:** pollution and sources of control, ecology, geology, mineralogy, oceanography, meteorology, climatology, geology, seismology, etc.
**ENGINEERING/ROBOTICS:** technology; projects that apply scientific principles to manufacturing and practical uses - civil, mechanical, aeronautical, chemical, heating and refrigerating, transportation, electrical, photographic, sound, automotive, marine, etc.

**MEDICINE & HEALTH/MICROBIOLOGY:** bacteriology, virology, fungi, bacterial genetics, etc.; study of diseases and health of humans and animals - dentistry, pharmacology, pathology, ophthalmology, nutrition, sanitation, pediatrics, dermatology, allergies, speech and hearing, etc.

**PHYSICS & ASTRONOMY:** solid state, optics, acoustics, particle, nuclear, plasma, superconductivity, fluid and gas dynamics, magnetism, quantum mechanics, biophysics, astronomy, etc.

**SENIOR DIVISION (Grades 9-12)**

**Behavioral and Social Science***: human and animal behavior, social and community relationships – psychology, sociology, anthropology, archaeology, ethology, ethnology, linguistics, learning, perception, urban problems, reading problems, public opinion surveys, educational testing, etc.

**Biology:** botany, zoology, genetics, biochemistry, including hormones, molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry, etc.

**Chemistry:** inorganic, organic, physical materials, plastics, fuels, pesticides, metallurgy, etc.

**Computer Science/Math:** development of computer hardware, software engineering, internet, simulations, statistics, calculus, geometry, abstract algebra, number theory, probability, etc.

**Earth/Environment:** pollution and sources of control, ecology, geology, mineralogy, oceanography, meteorology, climatology, geology, seismology, etc.

**Engineering/Robotics:** technology; projects that apply scientific principles to manufacturing and practical uses - civil, mechanical, aeronautical, chemical, heating and refrigerating, transportation, electrical, photographic, sound, automotive, marine, etc.

**Medicine & Health/Microbiology:** bacteriology, virology, fungi, bacterial genetics, etc.; study of diseases and health of humans and animals - dentistry, pharmacology, pathology, ophthalmology, nutrition, sanitation, pediatrics, dermatology, allergies, speech and hearing, etc.

**Physics & Astronomy:** solid state, optics, acoustics, particle, nuclear, plasma, superconductivity, fluid and gas dynamics, magnetism, quantum mechanics, biophysics, astronomy, etc.

* Social sciences projects which do not involved an experiment or data are not appropriate for competition at PRSEF.
Presentation Board Size Requirements

The standard presentation board is a three-panel, free-standing structure that folds for ease in transporting to and from Covestro PRSEF. You can make your own, ask your teacher about ordering a stock board from an educational supply catalog or visit your local office supply store.

Board size MUST NOT exceed:
- **Tabletop Display**: 36” wide (122 cm) x 30” deep (76 cm) x 78” high (198 cm)
- **Floor Display**: 36” wide (122 cm) x 30” deep (76 cm) x 108” high (274 cm)

Note: Please inform PRSEF one month prior to fair day to make special arrangements for floor displays.

Oversized exhibits may be disqualified.

**IMPORTANT NOTE**: Students must set up their project displays. Parents and teachers are not permitted on the exhibit floor. Heavy wooden, double-stacked, plastic, or metal display boards are **not** recommended. Please plan accordingly.

Helpful Hints

**Photographs.** Many projects involve elements that may not be safely exhibited at Covestro PRSEF, but are an important part of the projects. Take photographs of important parts/phases of your experiment to use in your display. Photographs of human test subjects must have signed consent forms. Credit must be given for all photographs.

**A Good Title.** Your title should be simple, accurate and descriptive. Make the observer want to know more.

**Organization.** Make sure your display is logically presented and easy to read. A glance should permit anyone (particularly the judges) to quickly locate the title, experiments, results, and conclusions. When you arrange your display, imagine that you are seeing it for the first time.

**Eye-catching.** Make your display stand out. Include photographs. Use neat, colorful headings, charts, and graphs. Pay special attention to the labeling of graphs, charts, diagrams, and tables. Each item must have a descriptive title. Anyone should be able to understand the visuals without further explanation.
**What You Must Bring to the Science Fair at Carnegie Science Center:**

- Presentation Board
- Project Data Book (highly recommended by the judges, but not required)
- Research Paper (recommended, but not required)
- Copies of your final Abstract
- Copies of the forms submitted to Covestro PRSEF – for reference only – NOT FOR DISPLAY
- **A LIGHT SNACK** - We suggest that you bring a piece of fruit, granola bar and/or water with you, especially if you are leaving early from home or school on fair day! Unopened water bottles or refillable empty water bottles are permitted. The RiverView café at the Carnegie Science Center will be open for lunch.

*Other important fair day details to remember.....*

Your name must not be displayed on your project board or paperwork. Please remember this when you are putting together your project board. You will be required to cover any instances of your name on your project board before the start of judging. **Also, do not list parents or teachers by name on the acknowledgments.** Names can be placed on the back of the board for identification purposes.

Your Project ID will be assigned by Covestro PRSEF and will be available online in mid-March at [www.pittsburghsciencefair.org](http://www.pittsburghsciencefair.org). Knowing your Project ID before the fair will help you to find the location assigned for your project. **Project ID Cards will be provided on Fair Day for use on your project board.**

**JUDGING** - Students will be required to stand by their projects during the entire judging session. Please dress appropriately and wear comfortable shoes. You will be standing and walking throughout the day.

**Be Prepared!** - Practice your presentation! Remember that the judges will be interviewing you and asking about your work. You must know your research and be able to communicate your research to others effectively. The judges are interested in hearing why you chose your research topic, what interested you most in your findings, how your research can enhance the world and its inhabitants. Note cards are permitted, but please do not read directly from them.

**Competition Day** – **Wednesday, March 25, 2020  7:00 a.m. - 4:00 p.m.** (students will be released by 4:30 p.m.)
**Awards Ceremony** - **Thursday, March 26, 2020, 6:00 p.m. - 8:30 p.m.**

Still have questions? Visit the Covestro PRSEF website, [www.pittsburghsciencefair.org](http://www.pittsburghsciencefair.org).
Students’ displays are inspected after set-up and prior to judging. All projects must satisfy certain inspection requirements before they are cleared for judging. The following is a checklist used by Covestro PRSEF inspectors and is provided here, FOR REFERENCE PURPOSES ONLY, to assist students/teachers in double-checking their project displays before Covestro PRSEF day.

1. Is the project # displayed on the top center of the student’s board presentation?
   ________ Yes, go to #2 ________ No, move it to the center

2. Does the project # displayed on the board match the project # on the student’s badge?
   _____ Yes, go to #3 _______ No, remove the project # and have the student move their project to the correct table

3. If there are photographs on the board, do they have credit lines (such as “Photograph taken by…”) indicating their origin?
   _____ Yes, go to #4 ________ No, have the student attach a photo credit label (available at the information hub)

   *Photographs from the internet, magazines should also have credit lines. Photographs of the student are permitted. Photographs of human subjects are permitted if photo release form is completed.

4. Exhibit size SHOULD NOT exceed:
   Table top display - 36” w (122 cm) x 30” d (76 cm) x 36” h (91 cm)
   Floor display - 36” w (122 cm) x 30” d (76 cm) x 108” h (274 cm)
   ________ The exhibit is within size limits, go to #5 ________ The exhibit is too large (send student to Info Hub)

5. Project SHOULD NOT contain the following:
   ______ living organisms (plants, animals, microbes, bacteria)
   ______ dried plants (living/dead/preserved) which are in their raw or unprocessed or unmanufactured state
   ______ taxidermy specimens or parts (stuffed or mounted skins of dead animals)
   ______ preserved vertebrate (having a backbone or spinal column) or invertebrate animals
   ______ human or animal food
   ______ human/animal parts or body fluids; exceptions: teeth, hair, nails, dried animal bones, histological dry mount sections and wet mounts properly acquired.
   ______ soil or waste samples unless permanently encased in a slab of acrylic
   ______ liquids of any kind (laboratory chemicals and WATER)
   ______ poisons, drugs, controlled substances, hazardous substances or devices (firearms, weapons, ammunition, reloading devices)
   ______ dry ice or other sublimating solids (i.e., solids which vaporize to a gas without passing through a liquid phase)
   ______ “loose” sharp objects (pins, tacks, knives, scalpels, needles, syringes, etc.) unless firmly intact on the project
   ______ empty tanks that have previously contained combustible liquids or gases, unless purged with carbon dioxide
   ______ open top cell batteries (i.e., batteries with a removable cap / can see acid inside if removed)
   ______ breakable objects (beakers, test tubes, slides, etc.) unless they are firmly attached to the project
   ______ electrical or hot apparatus that is not properly insulated (must be UL approved electrical materials, i.e., extension cords/surge suppressors)
   ______ photographs or other visual presentations depicting vertebrate animals in other than normal conditions (i.e., surgical techniques, dissections, necropsies or other lab techniques)
   ______ active internet or email connections as part of displaying/operating project
   ______ prior year’s written or visual depictions on display board (Exception: the project title may mention year or years in the title ie. “Year Two of an Ongoing Study”).
ABOUT THE JUDGES

One of the most valuable experiences for young scientists and engineers is the opportunity to discuss their findings with established members of the scientific, engineering and technology communities. Covestro PRSEF competitors take great pride in their work and judging interviews greatly contribute to the overall educational experience of the competition. Each year, professionals, university faculty, industrial scientists and engineers, representatives of private and federal research centers and agencies, and medical researchers volunteer their time to interview and encourage our region’s most promising young scientists and engineers.

There are six different types of judges at Covestro PRSEF: **Category Award** judges select winners in each of the 21 categories; **Sponsor Award** judges represent their professional organizations or institutions and judge students’ projects for their specific award criteria; **Affiliated Award** judges represent sponsors from the International Science and Engineering Fair (ISEF); **Scholarship Award** judges choose senior division students who qualify for scholarship awards from participating colleges and universities in our region; **International Science and Engineering Fair (ISEF)** judges select the winner(s) to attend ISEF; and **Collegiate Award** judges are college students who interview Junior division students, select the best projects and present them with certificates and giveaways.

The decisions of the judges determined on the day of the fair are final.

Covestro Pittsburgh Regional Science & Engineering Fair judges all adhere to the following ethics standard:

*To preserve the integrity of the Covestro Pittsburgh Regional Science & Engineering Fair, even the appearance of prejudice must be avoided. If a judge has any relationship to or knowledge of an entrant or project, that judge must decline participation where it may influence an entrant’s award.*

**Message from the judges:**

Be ready to talk in depth about your research. You should be able to have a conversation about your work and results. Practice explaining your research to your parents, teachers, and friends, especially people who don’t understand your research. Tell everyone to ask you at least three questions.

Judges look for well thought out research. They consider how significant your project is in its field, as well as how thorough you were in conducting your research. Did you leave something out? Did you start with four experiments and finish only three? It’s OK if you didn’t get the result you expected - make sure you can explain why your result was not what you expected.

Judges recognize students who can speak freely and confidently about their work. They are not interested in memorized speeches but prefer simply to TALK with you about your project to see if you have a good grasp of your research from start to finish. Note cards are permitted, but please do not read from them. Besides asking the obvious questions, judges often ask questions to test your insight into your project, such as, “What was your role?” or “What didn’t you do?” or “What would be your next step?”

**JUDGES EXPECT YOU TO DEMONSTRATE THAT YOU DID THE WORK AND UNDERSTAND THE RESULTS.**
Category Judges
Category judges choose the winners in each category (i.e. Junior Division Chemistry, Senior Division Biology etc.). Students are judged on scientific thought or engineering goals, experimental method or procedural plan, analytical approach, visual presentation and oral presentation. These judges use rubrics which are tailored to specific areas of research. Point scores are used as a judging tool. Rubrics, less the point values, will be provided to the students' teachers after the competition. Check the judges handbook [http://www.carnegiesciencecenter.org/stemcenter/stemcenter-science-fair-judges-and-volunteers/] for the judging rubrics, procedure and selection process. The decisions of the judges, determined on the day of the fair, are final.

Sponsor Judges
Sponsors of Covestro PRSEF send a representative to select the winning science fair project(s) in their field of interest. These judges have specific criteria based on their company’s mission. For example, PPG will present six (6) awards for projects involving chemistry, physics, engineering, or material science which demonstrate creativity and knowledge in topics related to fiberglass, glass, coatings, paints, plastics, inks, adhesive, color, optically transparent material, polymers or chemicals. Two awards in each division (6th, 7th-8th, 9th-12th). Sponsor awards are presented on the exhibit floor between 2p - 4p on Fair Day. For a list of project ideas from our sponsors, reference the Teachers’ and Students’ Handbook at [http://www.carnegiesciencecenter.org/stemcenter/stemcenter-science-fair-teachers-and-students/]. For a complete list of Covestro PRSEF sponsors, visit [http://www.carnegiesciencecenter.org/stemcenter/stemcenter-science-fair-sponsors-and-awards/].

Affiliated Sponsor Judges
Covestro PRSEF is a regional science fair affiliated with the International Science and Engineering Fair (ISEF). Affiliated sponsor awards are presented at Covestro PRSEF based on criteria received from ISEF and their sponsors. For example, the National Oceanic and Atmospheric Administration provides certificates and medallions to the projects that emphasize NOAA's mission to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social and environmental needs.

Scholarship Judges
In 2020, more than 100 scholarships are expected to be awarded to Covestro PRSEF student researchers from local colleges and universities. Scholarships include full/half/partial tuition scholarships and pre-college program scholarships. For example, Carnegie Mellon University awards two pre-college program commuter scholarships to be utilized for the Advanced Placement/Early Action Program valued up to $7,882. Allegheny College awards up to four scholarships in the amount of $18,000 per recipient. Preference for scholarship consideration will be given to students who embody the philosophy of the College and wish to explore their diverse interests after high school. Visit [http://www.carnegiesciencecenter.org/stemcenter/stemcenter-science-fair-sponsors-and-awards/] for a complete list of scholarships.

TIP: Judges applaud those students who can speak freely and confidently about their work. They simply want to talk with you about your research. Greet the judges with a firm handshake. Appearance, good manners, appropriate attire and enthusiasm for what you are doing will impress the judges.
Nearly 30% of all PRSEF participants in 2019 won an award!

**CATEGORY AWARDS**

**Senior Division:**
- $300 - First Place
- $150 - Second Place
- $75 - Third Place

**Intermediate Division:**
- $150 - First Place
- $75 - Second Place
- $25 - Honorable Mention

**Junior Division:**
- $75 - First Place
- $50 - Second Place
- $30 - Third Place

Certificates of Science Excellence will be sent to the winning students’ schools. All category award winners will receive medals at the Awards Ceremony. Teams will split the cash prizes. Checks will be mailed to students’ homes after they complete the W9 form.

**SPONSOR AWARDS**

Sponsor awardees will receive $50 and a medal. Sponsor awards are defined and selected by the sponsoring organization. Some sponsors invite students to club meetings, recognition dinners or site tours. Checks will be mailed to students’ homes after they complete the W9 form.

**Affiliated Sponsor** awards (certificates, medallions, items as determined by sponsors) will be awarded at PRSEF because of its affiliation with ISEF. These sponsors include Ricoh Americas Corporation and Yale Science and Engineering Association among others.

**SCHOLARSHIPS**

Full/half/partial tuition and pre-college program scholarships will be determined and selected by the awarding colleges and universities.

**MERIT AWARDS**

Category Judges select students who exhibit excellence in Creativity, Presentation, or Scientific Method. Recognized students will receive a certificate of excellence that signifies their outstanding performance in one of these areas.

**CARNEGIE SCIENCE AWARDS**

One student in each Division will be honored at the Carnegie Science Awards in May 2020.

**PERSEVERANCE AWARDS**

Certificates of excellence will be awarded to students for their continued dedication to the exploration of science and engineering. Qualifying students must submit the perseverance form by February 28, 2020.

**Honorary Scientist**

Eleventh and twelfth graders with five or more years of active participation.

**Associate Scientist**

Eleventh and twelfth graders with three or four years and tenth graders with four or five years of active participation.

**Junior Scientist**

Eighth and ninth grade students with three or four years of active participation.

**INTERNATIONAL SCIENCE & ENGINEERING FAIR (ISEF) AWARDS**

**Senior Division (9th - 12th grades):** Each student researcher entering an exhibit in this division may apply for participation in the International Science and Engineering Fair (ISEF), [https://student.societyforscience.org/isef](https://student.societyforscience.org/isef). The procedure for application can be accessed at [www.pittsburghsciencefair.org](http://www.pittsburghsciencefair.org). Applications must be submitted no later than February 28, 2020. High school student researchers will be chosen on fair day and compete at ISEF, held May 10-16, 2020 in Los Angeles, California all expenses paid.

**Junior Division (6th grade) and Intermediate Division (7th - 8th grades):** First, second and third place category award winners are nominated to advance to the Broadcom MASTERS (Math, Applied Science, Technology, and Engineering for Rising Stars), a program of Society for Science & the Public. Learn more at [https://student.societyforscience.org/broadcom-masters](https://student.societyforscience.org/broadcom-masters).

**Sponsors**

Covestro, FedEx Ground, with additional support from regional academic institutions, corporations, foundations and professional societies.

The Covestro Pittsburgh Regional Science & Engineering Fair is presented by Carnegie Science Center. Please contact us at 412.237.1534 or PRSEF@carnegiesciencecenter.org or visit www.pittsburghsciencefair.org.