

2006 Colorado Science and Engineering Fair Scientific Review Committee Report

This year, we had 283 projects to review and the SRC Determinations (after corrections were sent in) broke out as follows:

- Complete Projects – 212 (74.9%)
- Minor Corrections Needed – 37 (13.1%)
- Major Corrections Needed – 12 (4.2%)
- Interviews – 22 (7.8%)
- Violations – 0 (0.0%)

The response to e-mails and faxes sent out was incredible. We were able to fix a lot of the problems prior to CSEF. The most common minor issues were:

- Incomplete bibliographies – as of 2005, students are suppose to have 5 references; please let your teachers know that there are formats for web site resources and personal interviews – see the reference guide sheet in the CSEF Handbook.
- The Designated Supervisor Form 3 being written in the past tense. This form is to be completed PRIOR to experimentation taking place. See below for changes made to this form for 2007.
- Form 1 & 1A not matching for type of project. See below for changes to this for 2007.
- Form 1 not being correctly marked.

The issues that caused the most concern for the SRC were:

- Invalid IRBs. Remember that Adult Sponsors, Qualified Scientists, Designated Supervisors, and Parents CANNOT be a member of the IRB reviewing a human subjects project. It is a conflict of interest – you want fresh sets of eyes reviewing the procedures.
- Not having enough information in the procedures to determine exactly what was done. The more information that is given about what the student did for the experimentation part of the project the better.
- Missing a Designated Supervisor Form 3 for obviously hazardous items used in the project. See below for the changes made to this area for 2007.
- Missing critical information and regulatory board review paperwork for projects done at Regulated Research Institutes. Remember that all universities and research labs will have their own IRB and SRC that should be reviewing a student's project prior to their doing work there (where applicable – animals, biological hazards, and humans).

The Intel International Science and Engineering Fair SRC has made some very sweeping changes to the forms for 2007 I believe that most of the changes are very positive and will streamline the process. Here are the highlights:

Checklist for Adult Sponsor (1) – Filled out PRIOR to Experimentation

- Question #3 is new and reminds the Adult Sponsor that they are responsible for reviewing possible risks involved with the project.
- Question #4 breaks out the types of projects that require PRIOR SRC approval and ask that they be identified here.
- Question #5 identifies the forms that are required for all projects.
- Question #6 identifies the forms that are needed for human subjects, animal, biological agents and hazardous chemical, activities and devices projects.
- This is the only form that the Adult Sponsor must sign and the contact information listed at the bottom is imperative.

Student Checklist (1A) – Filled out PRIOR to Experimentation

- Question #3 is new and requires that the student identify his/her school information regardless of whether it was a work site or not.
- Question #4 asks for the Adult Sponsor name and e-mail or phone number.
- Question #5 indicates whether the project is a continuation or not.

Student Checklist (1A) continued – Filled out PRIOR to Experimentation

- Question #6 asks for the projected start and end dates (this is good to fill out when the student is first starting to work on the project and do the planning) and the ACTUAL start and end dates (this should be filled out when the EXPERIMENTATION portion of the project begins. Please note that the initial end date should be just prior to the first competition that the student enters, whether that is a school, district or regional fair. If the student decides to collect more data (without changing the procedures!!) between competitions, then a modified end date should be indicated on this form.
- Question #7 asks where the experimentation portion of the project will be conducted – in other words, where is the data being collected? If the only thing the student is doing at home is writing the report or working on the display, then home is not a work site.
- Question #8 now asks for the PHYSICAL addresses and phone numbers for the non-school work sites listed in #7. Please remember that you can't do work in a PO Box!
- You will note that you don't have to match the boxes marked on Form 1 with Form 1A any more – this will save a lot of time as this has been one of those minor issues that always came up in review.

Research Plan – Completed PRIOR to Experimentation

- Note that students do not have to fill out this form, but simply create their research procedures on a separate piece of paper. A copy of this form DOES NOT need to be attached to it – simply label each section (A – C) and I will be happy.
- The Intel ISEF SRC has done a wonderful job in outlining what should be included in the procedures, especially for those projects that deal with humans, animals, biological agents and/or other hazards.

Approval Form (1B)– Completed PRIOR to Experimentation

- The student must sign an agreement to abide by an ethics statement and that they understand the risks associated with the project they have chosen to research.
- If a project is done at a Regulated Research Institution (i.e. a university) and it is the type of project that requires prior SRC/IRB approval, the student needs to get prior approval from that institution's review board and include any documentation that this has been done. They don't necessarily need to get their school's SRC/IRB approval prior to doing the research. If the school's SRC/IRB reviews the project after experimentation and sees that all rules were followed and they have documentation from the regulated institution, then they would sign in box #2a. If the review does not come until the regional science fair level, then that SRC would sign in box #3.

Regulated Research Institutional/Industrial Setting Form (1C) – Completed AFTER Experimentation

- This is the only form that needs to be filled out after experimentation is completed at that particular work site.
- Please note that all questions need to be completed REGARDLESS of whether the student only used equipment or performed experiments at the work site.
- This form is to be used for any work done at a regulated research institution (i.e. a university) OR any INDUSTRIAL SETTING (i.e. – a local doctor's office or water treatment plant).

Qualified Scientist Form (2) – Completed PRIOR to Experimentation

- For the information about the Qualified Scientist, the Educational Background is their area of expertise and the Degree(s) is the level of degree (i.e. Ph.D., etc.). If the scientist doesn't have an advanced degree, but has special experience or training that makes him/her qualified, this can be explained here.
- Question #1 asks the QS if they were made aware of the Intel ISEF rules before the student began their experiment.
- Question #2 asks if human subjects, animals, biological agents, or DEA-classed substances will be used in the project – this answer should match what the Adult Sponsor listed on Form 1.

Qualified Scientist Form (2) continued – Completed PRIOR to Experimentation

- Question #3 asks if the QS will DIRECTLY supervise the student. If not, then a Designated Supervisor is identified here and the experience/qualifications of the DS is described.
- Question #4 needs SPECIFIC descriptions of the safety precautions and training needed for the project. A Form 3 can be used along with this form to describe the risks involved in the project.
- Please note that not only will the QS sign the Form 2, but if there is a designated supervisor, they will also sign here.

Risk Assessment Form (3) – Completed PRIOR to Experimentation

- This form takes the place of the previous Designated Supervisor form and breaks the information needed into 5 questions. A student can use as many of these forms as needed to include ALL hazards.
- Hazards include CHEMICALS (household or laboratory), ACTIVITIES, DEVICES (lab equipment, tools, etc.) and/or REGULATED SUBSTANCES (alcohol, tobacco, firearms, etc.).
- Please note that the person signing this form can either be the Qualified Scientist (if he/she is DIRECTLY supervising the student) or the Designated Supervisor.

Continuation Projects Form (7) – Completed AFTER Experimentation

- Students must include a copy of previous years' abstract, Form 1A and Research Plan with this completed form. If it is only the second year of continuation, then there will be only one set of prior year's forms. If this is the third year of continuation, then there will be two sets of prior years' forms.
- This form has been changed to gather information on the current year's research as well as prior year(s)' research. It asks for the Title, Objectives, Variables Studied, Line of Investigation, and Additional Changes.

The forms for Human Subject research, Vertebrate Animal research, and Potentially Hazardous Biological Agent research has not changed much, if at all this year. Please visit the CSEF web site for details on these forms.