Instructions for the CCCSEF Risk Assessment Form (Middle School)

Why?
Good scientists and engineers do not want to endanger anyone working on their projects, nor suffer delays when injuries occur. So they actively assess project risks before they begin. They look across the spectrum of likely trouble sources and participant vulnerabilities to foresee risks and manage them thoughtfully.

How?
This Risk Assessment Form is designed to help you detect your project's risks and reduce them with careful precautions. Column 1 (Risks) reminds you of the many ways in which participants could be hurt. Column 2 (Sources of risk) lists the sometimes-dangerous features of science or engineering activities.

Work through columns 1 and 2 line by line. For each source of risk, circle the letter that represents its risk *level* for your specific project (from N for None to H for High risk). Then, with all of your project's M (Medium) and H (High) risk sources identified, work through the form again and spell out the precautions, the compensating actions, that you will take to reduce those higher risks (often some precautions will help you handle several related risks).

Example:
This safety form, more than the other two, calls for big-picture or "integrated" thinking about project risks. If you wear glasses, you know that your optometrist (or ophthalmologist) takes relatively few precautions when examining your eyes and prescribing your lenses. Even though lens selection happens very close to your face and eyes, it poses very little risk to either you or your eye doctor.

On the other hand, your dentist, who works similarly close to your face, confronts higher risks. Routine dental activity spatters your blood, saliva, and tooth fragments onto your dentist, just as their fingers (and perhaps hair) enter your mouth. Hence, to avoid sharing infections, dentists take precautions--hair caps, eye (or full-face) shields, mouth masks, and latex gloves--to reduce these risks for you and them alike. (They also leave the room when taking X-rays of your teeth, to reduce a different kind of risk.)

As you complete the Risk Assessment Form, think about your project from all perspectives, just as your dentist surveyed the many aspects of your office visit. For instance, examining milk (that you have somehow treated) through a microscope probably poses few risks and demands few precautions. Heating that same milk, depending on the details, might call for precautions against

- the container breaking,
- the hot (or contaminated) fluid spattering onto your face, hands, or eyes, and
- the heat source igniting nearby solvents, your hair, or your clothes. Here is an example of a completed "hair" row on the form:

To hair	Flammable hair-care products? Long enough to catch in tools? Fumes? Splashed liquids?	N L M (H) N L M (H) N L M H N L M H	I will tie back and secure my long hair to keep it away from the open flame.

Just as your dentist safely works on many patients each day because of thoughtful risk management, so you too can safely pursue your planned project if you think ahead about its risks and manage them. Use this form to help you.

CCCSEF Risk Assessment Form (Middle School)
Student name:_____
Parent/guardian or teacher approval:_____
Complete this chart to assess the risks that your project poses for you and for others involved. For any risk determined to be M(edium) to H(igh) or Y(es), please complete the appropriate ISEF Form(s) available on the application page and turn in for Pre Approval due by October 31, 2011 (Postmarked).

Risks to participants:	**Sources of risk (circle the level for each one: None, Low, Medium, High)**		**Precautions you will take (to reduce each Medium and High risk)**	**ISEF Form Required For Medium or High Risk or Yes response**
To hands	Cuts? Broken glass? Burns? Chemicals? Crushed fingers? Dry ice? Electric shock?	N L M H N L M H N L M H N L M H N L M H N L M H N L M H		Risk Assessment Form 3
To eyes	Dust? Flying fragments? Fumes? Smoke? Splashed liquids? Lasers? Viewing the sun?	N L M H N L M H N L M H N L M H N L M H N L M H N L M H		Risk Assessment Form 3
To hair	Flammable hair-care products? Long enough to catch in tools? Fumes? Splashed liquids?	N L M H N L M H N L M H N L M H		Risk Assessment Form 3
To lungs	Allergies? Dust? Fumes? Mold? Microorganisms? Smoke?	N L M H N L M H N L M H N L M H N L M H N L M H		Risk Assessment Form 3 Potentially Hazardous Biological Agents Form 6A
To body or clothes	Allergies? Corrosive chemicals? Electric current? Flammable synthetic fibers? Flying fragments? Fumes? Infectious material? Microorganisms? Splashed liquids?	N L M H N L M H N L M H N L M H N L M H N L M H N L M H N L M H N L M H		Risk Assessment Form 3 Potentially Hazardous Biological Agents Form 6A
Human Tissue, Blood, Body Fluids		Y OR N		Human Participants Form (4) Human and Vertebrate Animal Tissue Form (6B)

Any Human Participants not conducted at a research institute		Y OR N		Human Participants Form (4) Consent Form (see ISEF Example)
Vertebrates Tissues, Blood, Body Fluids		Y OR N		Human and Vertebrate Animal Tissue Form (6B)
Research of Vertebrate animals at home, school, field research site		Y OR N		Vertebrate Animal Form (5A)
Research of Vertebrate animals at a Regulated Research Institute		Y OR N		Vertebrate Animal Form (5B)

CCSEF Nonchemical Hazards Form (Middle School)
Student name:_____
Parent/guardian or teacher approval:_____
Complete this chart to help manage your project's nonchemical hazards.

(1) Devices used (circle those in your project)	(2) Likely hazards (briefly explain)	(3) Precautions you will take (mark those that you will use; add others that your project also needs)
Hand tools (iron, staple gun, hammer, etc.)		o Wear gloves and closed shoes. o Wear eye shield or safety glasses. o
Power tools (electric drills or saws, etc.)		o Wear gloves and closed shoes. o Wear eye shield or safety glasses. o Keep cords away from blades, walkways. o
Lab gear (glassware, vacuum pumps, etc.)		o Wear long pants and closed shoes. o Wear eye shield or safety glasses. o Protect clothes from splashes. o
Heat or flame (blowtorch, Bunsen burner, glue gun)		o Use gloves, clamps to hold hot items. o Keep solvents, hair away from flame. o Wear nonflammable lab coat. o
Ovens		o [See instruction sheet for example.] o
Sharps (razor blades, knives)		o Use handles and safety shields. o Sheath when not in use. o Discard blades in sharps container. o
Plastic syringes ("needles")		o Never use for flammable liquids. o Discard in sharps container. o
Lasers-- Class I: printers Class II: pointers Class III: spectrometers Class IV: medical/industrial		o Class II--avoid eyes. o Class III/IV--avoid eyes, skin, flammable materials. o
Other radiation sources: Non-ionizing (light, radio) Ionizing-- Radioisotopes X-rays		o Microwaves--avoid head exposure. o Ionizing--supervised lab use only. o
Other (any omitted above)		o [See instruction sheet for example.] o