STUDENT HANDBOOK (5th - 8th)

March 7-8, 2008

organized by

Junior Division (5-8)

RULES AND INFORMATION

The information contained herein is intended to provide you with information and to serve as rules for all school students.

ENTRY CATEGORIES:
We have established four categories. The MRSEF Junior Division categories are:

Entry Categories:
-MATHEMATICS / COMPUTER SCIENCE
-LIFE SCIENCE
-PHYSICAL SCIENCE
-ENVIRONMENTAL SCIENCE

Students may enter an **individual** or a **team project** (maximum of two students).

Group projects will compete with individual projects and will not be judged separately. 1st, 2nd, and 3rd place winners will be chosen for each category, if appropriate. However, being the only entrant does not necessarily qualify the student as the 1st place winner in any category. Once all the participants are ranked in their categories, a 1st place over-all winner will be selected for each section.

FORMS:
A copy of the MRSEF rules are attached and only those projects completing the forms and following the rules will be allowed in MRSEF. MRSEF forms can be obtained from the website ***-www.mrsef.org-*** All forms and rules must be completed and followed before the projects will be allowed to enter MRSEF.

a) Entry Form:
Please keep the original copy of an Entry Form. A copy of this form must be sent to the science fair review committee ***by Friday, February 22, 2008.***

b) Institutional Review Board Approval Form
Please keep the original copy of IRB form and any permission slips. A copy of this form must be available to review at MRSEF by the science fair review committee ***on February 22, 2008.***

MAIL FORMS TO:
MRSEF
Attn: Sherry Hill
4801 S. 2nd St.
Milwaukee, WI 53207

NOTE: **If there is no an IRB or a SRC to get an approval before experimentation at your school, please request an approval form from the MRSEF's IRB/SRC. There is an request form under the required forms at the website of the science fair: *www.mrsef.org***

ABSTRACT:
An abstract of the student's research, including purpose, procedure, results (data), conclusions, reflections or applications **must be submitted with the entry form.** The abstract is limited to 250 words. Abstracts will be submitted to judges qualified to assess your project.

JUDGING:
All junior and senior division entrants must be available for interviews by the judges from 5:00-8:00 pm on Friday, March 7, 2008. Participants must wait at the fair site; failure to participate in this portion of the judging will eliminate the participant from final selection for a 1st place award. Please see **the evaluation sheet** for judging.

CEREMONY:
All winners will be announced at the awards ceremony on Saturday, March 8, 2008. All results are final. The entrants are expected to be at the award ceremony on Saturday, March 8, 2008 at 1:00 PM.

AWARDS:
There will be one overall winner for the Junior Division in addition to smaller category winners. There will be three winners in each category in addition to any special awards that are available.

SPECIAL AWARDS:
Listed below are examples of past available awards. No guarantee is made that these awards will be available in the future. Available awards will only be presented if projects meet the criteria established by the providing organizations and are of outstanding quality.

Intel: Excellence in environmental Health and safety award
To: Outstanding project in environmental science
- *Student receives $200 plus and a certificate*

Eastman Kodak
To: Best use of photography in the project.
- *Student receives a camera and a certificate*
- *Sponsoring teacher receive an identical camera*

NAVY
To: Except ional work in science and engineering
- *Two student (in middle school division) receive a certificate*

National Society of Professional Engineers
To: For outstanding engineering project
- *Student receives a certificate, a lapel pin, and subscription to Engineering Times*

The Herbert Hoover Young Engineer Award
To: For outstanding engineering project
- *Student receives a certificate*

American Meteorological Society
To: Best meteorological exhibit
- *Two student receive certificates of achievement*

Mu Alpha Theta
To: Most challenging mathematics project
- *Student receives a certificate*

The American Psychological Association
To: For outstanding Research Psychology
- *Student receives a certificate*

The ASM International Foundation
To: Best materials engineering project
- *Student receives a certificate*

AWG
To: Outstanding project in the geosciences by a female student
- *Student receives a certificate*

SPIE Award
To: Best project in optical science
- *Student receives a certificate*

NACE Foundation
To: Best exhibit of controlling and preventing corrosion
- *Student receives a certificate*

U.S. Metric Association
To: Best use of the SI metric system for measurements
- *Student receives a certificate*

U. S. Department of Health
To: Projects about diabetes, obesity, or asthma
- *Student receives a certificate*

PROJECT SIZE:
Project size is limited to:
- ❖ 30" deep (front to back)
- ❖ 48" wide (side to side)
- ❖ 108" high (floor to top)

(Display tables are typically 30" high)

PROJECT SET-UP:
Projects must be set-up: **by 4:30 pm on Friday, March 7, 2008 at Wisconsin Career Academy,** 4801 S. 2nd Street Milwaukee, WI 53207 (near airport, behind the Wyndham Hotel). All projects must be checked by the Safety and Display Committee before they can register and set-up.

PUBLIC HOURS:
MRSEF is open to the public:
- ***Project Visit:*** Saturday, March 8, 2008; 12:00-1:00 pm
- ***Entertainment and Ceremony:*** Saturday, March 8, 2008; 1:00-2:30 pm

PROJECT REMOVAL:
Projects may be removed between 2:30 PM and 4:00 PM on Saturday, March 8, 2008.
Please notify all parents about this schedule.

MRSEF IS NOT RESPONSIBLE FOR LOST OR STOLEN ITEMS

Safety and Display Regulations

Items Unacceptable for Display:

1. Living organisms including plants
2. Taxidermy specimens or parts
3. Preserved vertebrate or invertebrate animals
4. Human or animal food
5. Human/animal parts or body fluids (for example, blood, urine) EXCEPTIONS: teeth, hair, nails, dried animal bones, histological dry mount sections, and completely sealed wet mount tissue slides.
6. Plant materials (living, dead, or preserved), which are in their raw, unprocessed, or non-manufactured state. EXCEPTION: manufactured construction materials used in building the project or display.
7. Laboratory/household chemicals including water. EXCEPTION: water integral to an enclosed apparatus or water supplied by the Display & Safety Committee for judging only.
8. Poisons, drugs, controlled substances, hazardous substances or devices (for example; firearms, weapons, ammunition, reloading devices)
9. Dry ice or other sublimating solids
10. Sharp items (for example, syringes, needles, pipettes, knives)
11. Flames or highly flammable materials
12. Batteries with open-top cells
13. Awards, medals, business cards, flags, acknowledgements, etc.
14. Photographs or other visual presentations depicting vertebrate animals in surgical techniques, dissections, necropsies, or other lab procedures
15. Active Internet or e-mail connections as part of displaying the project

Items Allowed for Display:

1. Soil or waste samples if permanently encased in a slab of acrylic.
2. Postal addresses, World Wide Web and e-mail addresses telephone numbers, and fax numbers of High School participants only.
3. Only photographs (that is, visual depictions) of the participant, the participant's family, photographs taken by the participant, and/or photographs for which credit is displayed (such as from magazines, newspapers, journals, etc) **if not deemed offensive** by the Display and Safety Committee.
4. Any apparatus with unshielded belts, pulleys, chains, or moving parts with tension or pinch points **if for display only and not operated.**
5. Large Vacuum tubes or dangerous ray-generating devices **if properly shielded**
6. Empty tanks that previously contained combustible liquids or gases if certified as having been purged with carbon dioxide
7. Pressurized tanks that contain non-combustible if properly secured
8. Any apparatus producing temperature that will cause physical burns if adequately insulated

Roles and Responsibilities of Students & Adults

1) The Student Researcher(s)

The student researcher is responsible for all aspects of the research project, including enlisting any needed supervisory adults (adult sponsor, qualified scientist, etc.), obtaining necessary approvals (SRC, IRB, etc.), following the Rules & Guidelines of the ISEF, and doing the experimentation, engineering, data analysis, etc. involved in the project.

The student must be in grades 9-12 or equivalent and must not have reached age 21 on or before May 1 preceding the Intel ISEF. Students may compete as a team of up to 2 members.

Scientific fraud and misconduct is not condoned at any level of research or competition.

Plagiarism, use or presentation of other researcher's work as one's own, forgery of approval signatures, and fabrication or falsification of data or approved dates will not be tolerated.
Fraudulent projects will fail to qualify competition in affiliated fairs or the ISEF.

2) The Adult Sponsor
An Adult Sponsor may be a teacher, parent, university professor, or scientist in whose lab the student is working. This individual must have a solid background in science and should have close contact with the student during the course of the project.

The Adult Sponsor is ultimately responsible not only for the health and safety of the student conducting the research, but also for the humans or animals used as subjects. The

Adult Sponsor must review the student's Research Plan (1A) to make sure that: a) experimentation is done within local, state, and federal laws and these International Rules; b) that forms are completed by other adults involved in approving or supervising any part of the experiment; and c) that criteria for the qualified scientist adhere to those set forth below.

The Adult Sponsor must be familiar with the regulations that govern potentially dangerous research as they apply to a specific student project. These may include chemical and equipment usage, experimental techniques, research involving human or nonhuman animals, and cell cultures, microorganisms, or animal tissues. The issues must be discussed with the student when completing the Research Plan (1A). Some experiments involve procedures or materials that are regulated by state and federal laws. If not thoroughly familiar with the regulations, the Adult Sponsor should help the student enlist the aid of a Qualified Scientist.

The Adult Sponsor is responsible for ensuring the student's research is eligible for entry in the Intel ISEF.

3) The Qualified Scientist
A Qualified Scientist should possess an earned doctoral/professional degree in the biological or medical sciences as it relates to the student's area of research. However, a master's degree with equivalent experience and/or expertise in the student's area of research is acceptable when approved by a Scientific Review Committee (SRC). The Qualified

Scientist must be thoroughly familiar with the local, state, and federal regulations that govern the student's area of research.

The Qualified Scientist and the Adult Sponsor may be the same person, if that person is qualified as outlined above. A student may work with a Qualified Scientist in another city or state. In this case, the student must work locally with a Designated Supervisor (see below) who has been trained in the techniques the student will use.

4) The Designated Supervisor
The Designated Supervisor is an adult who is directly responsible for overseeing student experimentation. The Designated Supervisor need not have an advanced degree, but should be thoroughly familiar with the

student's project, and must be trained in the student's area of research. The Adult Sponsor may act as the Designated Supervisor.

If a student is experimenting with live vertebrates and the animals are in a situation where their behavior or habitat is influenced by humans, the Designated Supervisor must be knowledgeable about the humane care and handling of the animals.

5) The Institutional Review Board (IRB)

An Institutional Review Board (IRB) is a committee that, according to federal regulations (45- CFR-46), must evaluate the potential physical or psychological risk of research involving human subjects. All proposed human research must be reviewed and approved by an IRB before experimentation begins. This includes any surveys or questionnaires to be used in a project.

Federal regulations require local community involvement; therefore an IRB should be established at the school level to evaluate human research projects. An IRB at the school or ISEF Affiliated Fair level must consist of a minimum of three members. In order to eliminate conflict of interest, the Adult Sponsor, parents, the Qualified Scientist, and the

Designated Supervisor who oversees a specific project must not serve on the IRB reviewing that project. Additional members are recommended to avoid conflict of interest and to increase the expertise of the committee. This IRB must include:

a) A science teacher
b) A school administrator (preferably a principal or vice principal)
c) And one of the following who is knowledgeable and capable of evaluating the physical and/or psychological risk involved in a given study: a medical doctor, physician's assistant, registered nurse, a psychiatrist, licensed psychologist, or licensed social worker.

If the IRB needs an expert as one of its members and one is not in the immediate area, then documented contact with an external expert is appropriate and encouraged. A copy of the correspondence (e.g. email, fax, etc.) should be attached to Form 4 and can be used as the signature of that expert. IRBs exist at federally registered institutions (e.g., universities, medical centers, NIH, correctional facilities). Prisoner advocates must be included on the IRB when research subjects are at a correctional facility. The institutional IRB must initially review and approve all proposed research conducted at or sponsored, by that institution. The Adult Sponsor and the local IRB are responsible for ensuring that the project is appropriate for a pre-college student and adheres to the ISEF rules.

An IRB generally makes the final determination of risk. However, in reviewing projects just prior to a fair, if an SRC judges an IRB's decision as inappropriate, thereby placing human subjects in jeopardy, the SRC may override the IRB's decision and the project may fail to qualify for competition.

6) The Scientific Review Committee

A Scientific Review Committee (SRC) is a group of qualified individuals that is responsible for evaluation of student research, certifications, research plans and exhibits for compliance with the Rules and pertinent laws and regulations. Local SRCs may be formed to assist the ISEF Affiliated Fair SRC in reviewing and approving projects. The operation and composition of the local and ISEF-Affiliated Fair SRCs must fully comply with the International Rules.

Any proposed research in the following areas must be reviewed and approved BEFORE experimentation: projects involving vertebrates, pathogenic and potentially pathogenic agents, controlled substances and

recombinant DNA (rDNA). (Human studies reviewed and approved by a properly constituted IRB do not have to be reviewed by the SRC until the Fair competition.)

ALL projects must be reviewed and approved by the SRC after experimentation and shortly before competition in an ISEF-affiliated Fair competition. (Projects requiring pre-approval which were conducted at a regulated research institution (not home or high school, etc.) and which were reviewed and approved by the proper institutional board before experimentation must also be reviewed by the Fair SRC for rules compliance.

In order to eliminate conflict of interest, the Adult Sponsor, parents, the Qualified Scientist, and the Designated Supervisor must not serve on the SRC reviewing that project. Additional members are recommended to help avoid this conflict of interest and to increase the expertise of the committee. If the SRC needs an expert as one of its members and one is not in the immediate area, then documented contact with an external expert is appropriate and encouraged.

A Scientific Review Committee (SRC) examines projects for the following:
a) Evidence of literature search
b) Evidence of proper supervision
c) Use of accepted and appropriate research techniques
d) Completed forms, signatures and dates showing maximum of one year duration of research and appropriate pre-approval dates (when needed)
e) Evidence of search for alternatives to animal use
f) Humane treatment of animals
g) Compliance with rules and laws governing human and animal research
h) Compliance with rules regarding recombinant DNA, pathogenic agents, controlled substances and hazardous substances and devices
i) Documentation of substantial expansion for continuation projects
j) Compliance with the ISEF ethics statement

7) The ISEF Scientific Review Committee (ISEF SRC)
A Scientific Review Committee exists at the Intel ISEF level. The ISEF SRC reviews the forms and the Research Plan for all projects to ensure that students have followed all applicable rules.

The ISEF SRC, like an Intel ISEF-Affiliated Fair SRC, is made up of a group of adults knowledgeable about regulations concerning experimentation in restricted areas. The ISEF SRC reviews the Checklist for Adult Sponsor, Research Plan (1A), including the Research Plan Attachment, and Approval Form (1B) in addition to all other required forms for students who enter the Intel ISEF. They also identify problems local fairs may be having and work with fair directors and teachers to resolve them.

If a fair director or ISEF Affiliated Fair SRC member has any questions concerning the process, feel free to contact Science Service or a member of the ISEF SRC.

The ISEF SRC is the final authority on projects that are eligible to compete in the Intel ISEF. In some cases, the ISEF SRC may have questions about particular projects. Usually, after students explain their procedures and research to the ISEF SRC, a simple corrective measure is prescribed (e.g., contacting the Designated Supervisor to confirm a detail, or rewriting an abstract for purposes of clarification).
It is important that students retain all original signed forms. Even though copies may have been sent with registration papers, students should bring original signed forms to the Intel ISEF in case an SRC interview is necessary. Do not send original forms to Science Service.

ABSTRACT

Milwaukee Regional Science & Engineering Fair

NAME OF STUDENT: .....**GRADE:** .....

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DIVISION: ..... **CATEGORY:** .....

SCHOOL NAME:
.....

SCHOOL ADDRESS: .....

..... **SCHOOL PHONE:** .....

SPONSOR/MENTOR NAME: .....

PROJECT TITLE:.....

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1. *Limit Abstract to 3 paragraphs (250 words or less). Include:*

a) Purpose*– what you set out to investigate;* ***b) Procedure*** *– how you did it;* ***c) Conclusion*** *– based on your results.*

2. *Must be typed, single-spaced, on the front side of this form. DO NOT write on backside of this form.*
This form MUST be submitted with the entry form.

THE INSTITUTIONAL REVIEW BOARD (IRB)

This form is required for Junior Division.

Student Name: _____

Grade: _____ **Teacher:** _____

Title of Project: _____

Project Question: _____

Project Hypothesis: _____
_____
_____

I think this will happen because: _____
_____

Single Variable Being Tested: _____
_____

Brief Description of Project: _____
_____
_____

I will measure this experiment by (check ALL that applies):

Survey	**Distance Measurement**	**Temperature**
Time Measurement	**Growth Measurement**	**Other (describe)** _____

HUMAN SUBJECTS (To be completed by IRB)	**ANIMAL SUBJECTS** (To be completed by IRB)
Permission Slips needed? ___ Yes ___ No (Keep slips with the project)	Permission Slip needed by owner? ___ Yes ___ No (Keep slip with the project)
Check-up of Human Subjects needed by school nurse or doctor? ___ Yes ___ No If yes, Doctor's or nurse's report must be attached to back of project display.	Check-up by veterinarian required? ___ Yes ___ No If yes, Veterinarian's report before and after experimentation must be attached to back of project display.

Principal / Administrator Signature_____ Date Reviewed_____
School Nurse / Doctor Signature_____ Date Reviewed_____
Science teacher/Mentor Signature _____Date Reviewed_____

MILWAUKEE REGIONAL SCIENCE & ENGINEERING FAIR (MRSEF)
Entry Form – Junior Division (5-8)

Project Title (as it appears on the display board): _____

_____

Student(s) Name: _____**Grade:** _____
Last, First, Middle Initial

Home Address: _____

_____

Home Phone #: _____ **E-mail:** _____

ENTRY CATEGORIES:
We have established four categories. The MRSEF Junior Division categories are:

Entry Categories:
-MATHEMATICS / COMPUTER SCIENCE
-LIFE SCIENCE
-PHYSICAL SCIENCE
-ENVIRONMENTAL SCIENCE

Science Teacher's Name: _____

School: _____

School Address: _____

_____

School Phone #: _____ **School FAX #:** _____

Teacher's e-Mail: _____

Applications are due: Friday, February 22, 2008

Call or email Sherry Hill at 414-483-2117 ext. 114 or hill@wiscca.org if you have questions.