

Northwest Science Expo

celebrating



25 years of Science

Portland State University

March 14, 2008

Middle School Rule Booklet

Sponsored by:

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Bill Becker

Intel NWSE for Middle School Participants 2008

For the 2008 Intel NWSE, middle and high school projects will be in two different locations at Portland State University. The Middle School Fair will continue to be in the Stott Center main gym, while high school students move to the Smith Center Ballroom. This allows us to tailor the middle school fair for a larger number of participants with an easier form process.

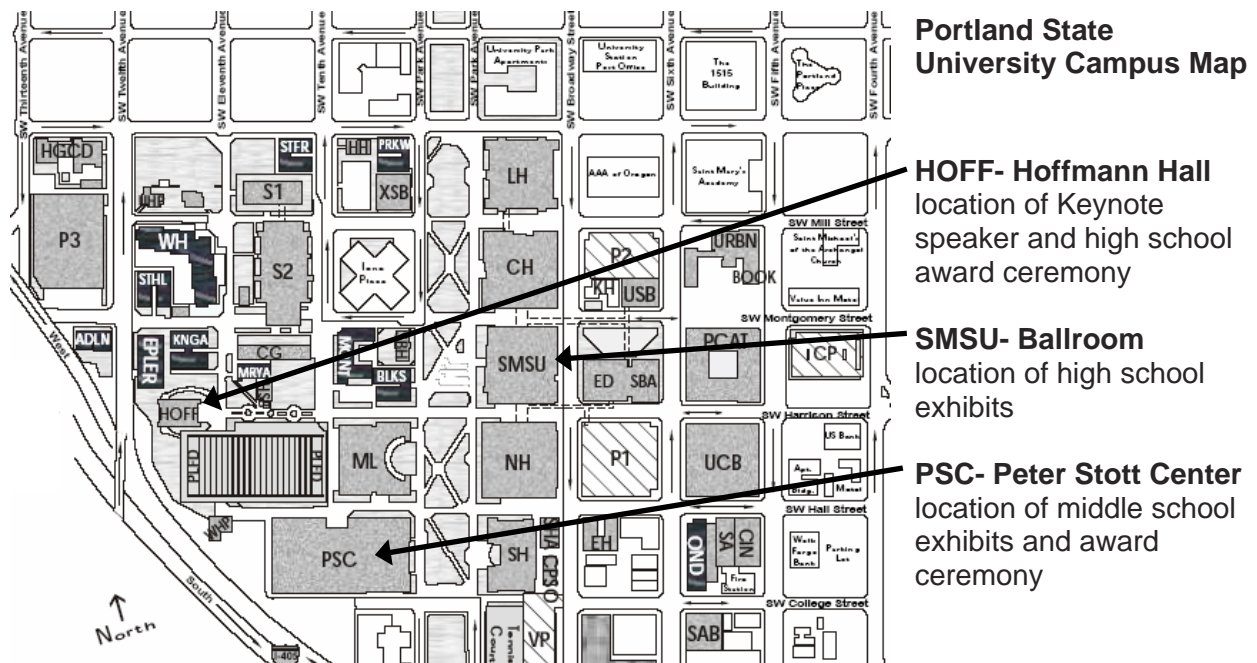
Middle School students in 5th-7th grade will be required to follow the NWSES Super EZ Rules for Middle School Projects. These rules allow some types of research projects involving human subjects, vertebrate animals, microbes, hazardous substances, and human and animal tissue. Please read the Super EZ Rules carefully (pages 2-4). The adult sponsor takes the responsibility that these criteria are met. If they are not, the project will be disqualified at the Intel NWSE. **The MS Super EZ form can be signed before, during or after experimentation.**

Eighth graders who desire to do a project outside of the Super EZ Rules may use the ISEF rules and forms. This will require their school to hold a Scientific Review Committee meeting with the school principal, a science teacher other than the adult sponsor, and a qualified scientist **before** the experiment is conducted. The qualified scientist must have experience with the type of project being conducted. See the ISEF rulebook for specific requirements.

The categories at Intel NWSE have also changed. Middle school students will choose from twelve categories (see page 5). Large team projects will compete in the subject category against individuals and small teams. A student is allowed to compete with only one project.

Project set-up will take place only on the evening of Thursday, March 13th. However, the student does not need to be present. An adult can set up the poster and provide paperwork for the student. Students do not need to be present until judging starts at 10:30am March 14th.

The **Award Ceremony** will be held in the gym with the students sitting at their exhibits. This means that posters will need to be laid down on the table to make sure everyone can see.



Middle school students are invited to compete at the Intel NWSE without qualifying at a regional fair, although they are encouraged to attend a regional fair if one is available. Fairs accommodating 5th - 8th grade students are listed on the back cover of this booklet.

NWSES Super EZ Rules for Middle School Projects

Human Subjects

Observational studies of legal public behavior of children and/or adults where there is NO interaction between the researcher and her subjects. (**OK:** a student observes how many children play on the monkey bars vs. the slide at the park. **Not allowed:** a student observes how many children play on the monkey bars vs. the slide at the park and then asks the children why they prefer one over the other.)

Not allowed

Eating or drinking anything, including food, candy or water.
Exercise studies.

Surveys

Consumer products testing involving human subjects.

Hazardous Chemicals, Activities and Devices

Projects involving the use of hazardous chemicals and devices and involvement in hazardous activities require direct supervision by a parent or teacher. A risk assessment needs to be included in the project procedures answering the following:

1. List the hazardous chemicals, activities or devices that will be used.
2. Identify the risks involved.
3. Describe the safety precautions used to reduce risk.
4. Describe the disposal methods used for hazardous chemicals.

Hazardous chemicals include acids, bases, and alcohol and tobacco products.

Hazardous activities are those that involve a level of risk above and beyond that encountered in the student's everyday life.

Hazardous devices include laboratory equipment that requires a moderate to high level of expertise to ensure its safe usage.

Not Allowed

Firearms and explosives
Class III and IV lasers
DEA controlled substances
Prescription drugs
Radiation

NWSES Super EZ Rules for Middle School Projects

Microbe Cultures

The following three microbes are approved without special precautions:

- Baker's yeast purchased from a store
- Brewer's yeast purchased from a store
- Yogurt cultures

A risk assessment needs to be included in the project procedures answering the following for all other microbe projects:

1. List the type of microbe that will be used.
2. Identify the risks involved.
3. Describe the safety precautions used to reduce risk.
4. Describe the disposal methods used.

The following microbe projects can only be conducted at school or a research lab:

I. **Unknowns** obtained from the environment must be treated as follows:

Studies involving unknown microorganisms present a challenge because the presence, concentration and pathogenicity of possible agents are unknown. In science fair projects these studies typically involve the collection and culturing of microorganisms from the environment (e.g. soil, household surfaces, skin, etc.)

1) Research with unknown microorganisms can be treated as a BSL-1 study under the following conditions:

- a) Organism **is cultured** in a plastic Petri dish (or other standard non-breakable container) **and sealed**. Other acceptable containment includes petro film and doubled heavy-duty (2-ply) sealed bags.
- b) Experiment involves only procedures in which the Petri dish remains sealed throughout the experiment (i.e. counting presence of organisms or colonies).
- c) The sealed Petri dish is disposed of in the appropriate manner under the supervision of the teacher or Designated Supervisor.

Not Allowed: opening a culture for identification, sub-culturing or isolation.

II. Bio Safety Level 1 microbes specifically listed below may be used as long as all BSL-1 containment precautions are followed.

BSL-1 risk group contains biological agents that pose low risk to personnel and the environment. These agents are highly unlikely to cause disease in healthy laboratory workers, animals or plants. The agents require BioSafety Level 1 containment. Approved BSL-1 organisms are: *Aspergillus niger*, *Bacillus thuringiensis*, *Escherichia coli strain K12*, *Lactobacillus acidophilus*, *Micrococcus leuteus*, *Neurospora crassa*, *Pseudomonas fluorescens*, and *Serratia marcescens*. The website <http://www.atcc.org> lists biosafety levels. Include a copy of a page showing the Biosafety level if the bacteria is not listed above.

BSL-1 containment is normally found in water-testing laboratories, in high schools, and in colleges teaching introductory microbiology classes. Work is done on an open bench or in a fume hood. Standard microbiological practices are used when working in the laboratory. Decontamination can be achieved by treating with chemical disinfectants or by steam autoclaving. Lab coats are required and gloves recommended. The laboratory work is supervised by an individual with general training in microbiology or a related science.

Microbe rules come directly from the Intel ISEF rulebook.

NWSES Super EZ Rules for Middle School Projects Vertebrate Animals

Two types of Vertebrate animal projects are allowed using the MS Super EZ form.

1. Observational studies of behavior of animals in their habitat (this includes the home for pets, the zoo, and nature) where there is NO intervention or treatment. (**OK:** a student observes goldfish behavior during feeding time vs. non-feeding times on a normal feeding schedule. **Not allowed:** a student observes how the goldfish react to not being fed on a normal feeding schedule.)
2. Behavioral projects for pets involving doing things that pets experience in everyday life i.e. a new food dish, supplemental treats (following label recommendations), a new toy. (**OK:** a student observes which colored dish a dog prefers to drink from. **Not allowed:** adding food coloring to water to see which color the dog prefers.)

Pets are defined as animals not acquired specifically for a research project.

Human and Vertebrate Animal Tissue

The following human and animal tissues are allowed using the MS Super EZ form.

- The researcher's *own* nail clippings
- Hair
- Sterilized teeth
- Meat or meat by-products obtained from a food store, with receipt
- Fossils
- Prepared fixed tissue slides

(**OK:** a student compares strength and texture of clippings of her own hair after it is soaked in different concentrations of salt solution. **Not allowed:** a student compares shape and size of teeth from a variety of 'road-kill' animals.)

Not Allowed

ALL other projects involving human and animal tissue, including those involving organs, non-sterilized teeth, blood and other body fluids.

Deadlines & Fees for Intel NWSE

January 30, 2008	Projects submitted & postmarked by this date pay \$5.
February 6, 2008	Projects submitted & postmarked by this date pay \$10.
February 13, 2008	Projects submitted & postmarked by this date pay \$15. Final day to submit projects.
February 28, 2008	Last day to edit project summaries and categories.
March 13, 2008	Exhibit set-up at Peter Stott Center for Intel NWSE.
March 14, 2008	Intel NWSE judging and award ceremony.

Regional Fairs have varying deadlines, refer to www.nwse.org

Intel Northwest Science Expo Middle School Categories

Animal Science and Microbiology: Animal Sciences, Microbiology, yeast.

Behavioral and Social Sciences: Human and animal behavior, social and community relationships- psychology, sociology, anthropology, archaeology, linguistics, learning, perception, urban problems, public opinion surveys, etc.

Chemistry and Earth: Study of nature and composition of matter and laws governing it- physical chemistry, organic chemistry, inorganic chemistry, plastics, metallurgy, soil chemistry, etc. Geology, mineralogy, climatology, oceanography, meteorology, seismology, geography, tectonics, planetary science, etc, astronomy.

Computer Science and Math: Study and development of computer software and hardware and associated logical devices. Development of formal logical systems or various numerical and algebraic computations, and the application of these principles- calculus, geometry, abstract algebra, number theory, statistics, complex analysis, probability.

Consumer Products Testing: Comparison of product quality, effectiveness, usefulness, economy, cost, smell, environmental friendliness, etc.

Engineering: Technology; projects that directly apply scientific principles to manufacturing and practical uses- civil, mechanical, chemical, electrical, material, thermodynamics, robotics etc.

Energy and Transportation: Aerospace and aeronautical engineering, aerodynamics, alternative fuels, fossil fuel energy, vehicle development, renewable energies, engines

Environmental Science: Study of pollution (air, water, and land) sources and their control; environmental engineering, ecology.

Medicine and Health: Study of diseases and health of humans and animals- dentistry, pharmacology, pathology, ophthalmology, nutrition, sanitation, pediatrics, dermatology, allergies, speech and hearing, etc.

Physics-Electromagnetic: Electricity, optics, magnetics, light.

Physics-Mechanical: Sound, friction, velocity, heat, Newton's Three Laws.

Plant Science: Study of plants.

↳ Large team projects will compete against individual and small team projects in the appropriate project category. A student may only have one project.

Selecting a category

The key for selecting your exhibit's category is the dependent variable (the thing that is being affected). For example, if a student examined the effects of the composition of the soil on plant growth, the dependent variable would be the height of the plant, since that is what the student is trying to measure change in. Since the dependent variable is the plant growth, this project would be under the category of Biology. However, if a student examined how plant growth changes the composition of the soil, then the dependent variable is the composition of the soil, and so his project would be under Chemistry and Earth. The only exception to this rule is when Consumer Products Testing is involved. For example, if a student tests different brands of similarly concentrated Orange Juice for amounts of Vitamin C, her project should be in Consumer Products Testing since it compares different brands. The key to this exception is that different brands of similar products are incorporated into the independent variable.

Middle School Registration Directions

All projects are required to register online. Steps 1-3 should be done early in the school year.

1. To register go to www.nwse.org and click on "Register Here". Then Login to Affiliated Fair Online Registration.
2. If you are a returning user, use last year's login and password. If this is your first year follow the directions to "Create a new user".
3. Enter or confirm your personal and school information.
4. Select the Northwest Science Expo System.
5. Chose the 1st fair your student will be attending.
6. Add a project. You will need the student's name, project category and a password for the project. The password is entirely up to you, but needs to be five characters long.
 - If the project is a team project, enter the name of the first student only. Additional students can be added during the next step.
 - If the project does not meet MS Super EZ rules, select ISEF forms.
 - After adding a project you can either add another project or go to the MS Super EZ form for the project just entered.
7. Fill out the MS Super EZ form for a project. Select the project and click on "Edit the Super EZ form". Enter the pronunciation of any difficult names, student's home phone number, gender, and school grade. Click on "Add Student" if it is a team project. Complete the MS Super EZ form by entering the project's title and summary. The summary may be left blank if the project is not finished.
8. Print the MS Super EZ form. The form prints in a pop-up window, so you will need to disable any pop-up blockers. The printed version of the form has spaces for signatures. One form per student will print, so if the project has a team of four students, four MS Super EZ Forms will print. See page 9 in this booklet for an example.
9. **Confirm project attendance** to the science fair. Select the project and click "Confirm project"; this must be done for all projects coming to a fair by February 13th.
10. **Mail copies** of each MS Super EZ form and project procedures (one per project) to the fair you are attending by the deadline.
11. **Bring originals** of all MS Super EZ forms and project procedures to the fair.

Other features of online registration:

- Change category: use this button to change the category of a project.
- Withdraw project: this button will unsubmit a submitted project. Do this if a student is unable to attend.
- Delete project: use this to delete projects from the system. This cannot be undone.
- Delete student: located on the MS Super EZ form, use to delete a student from a team project. Spelling corrections can be made directly on the MS Super EZ form.
- Student Access: Students on a project may edit the MS Super EZ Form by logging in with the exhibit number and password created by their adult sponsor.

Middle School Display Regulations

The poster is the first thing the judges see when they review your project. It is important to do your best and organize your information in a clear way.

Size Requirement:

Each project is given the following space to use for their poster and any additional items.

30 inches (76 centimeters) deep

36 inches (91 centimeters) wide

78 inches (198 centimeters) high from top of table

✂ Please note: a standard 4ft display board will fit nicely in this space.

Not Allowed at display:

- Living organisms-plants or animals or dead parts of animals or plants (processed plant materials are allowed as part of the display)
- Any Liquids
- Dirt, soil, bark chips or sand
- Aerosol bottles or other pressurized gases
- Glass
- Open top batteries
- Hazardous substances or devices including lasers
- Sharp items
- Flames or highly flammable items
- Any human or animal food

Basically if it can spill, hurt or cause an allergic reaction it is not allowed.

Acknowledgements to specific people or organizations or School names are not allowed either.

Allowed with restrictions:

- Photographs- you must have permission to post a person's picture or make the person unidentifiable. You must also list the primary source of any photographs. If you are using pictures obtained from the internet, there are special considerations. Please check the NWSE website for more information.
- Electricity- due to limited electrical outlets, NWSE will require requests be submitted to ask for electricity. Electricity should only be requested to demonstrate a key component of the project. Requests to power lighting or PowerPoint presentations will be denied.

Hints for a good poster:

Good Title: Your title is an extremely important attention grabber. A good title should simply and accurately present your research and depict the nature of the project. The title should be no longer than 10 words.

Nice Visuals: Photographs, illustrations, charts and graphs that explain your results and project in an easy to understand way.

Be Organized: Make sure your display follows a sequence and is logically presented and easy to read. A glance should permit anyone (particularly the judges) to locate quickly the title, summary, experiments, results and conclusions.

Clearly Presented: Be aware that font needs to be large enough to read from 3 feet away. Judges do not have time to view a PowerPoint, make sure your poster has all the information they need.

All exhibits need to have their MS Super EZ form and project procedures, either posted or in a lab notebook. The lab notebook can also hold additional graphs and data tables.

Intel NWSE Awards

Best of Fair Awards - Middle School Division- Grades 5-8

- ❖ Plaques are awarded to the project(s) judged best in the Middle School Division.
- ❖ The top 10% of middle school projects are nominated to enter the Discovery Channel Young Scientist Challenge, a national middle school competition.

Category Awards

- ❖ In both divisions, medallions are presented to each student whose project placed 1st-3rd in their category. Ribbons are presented to middle school students who earn Honorable Mention. First place winners in each category receive monetary prizes.

Special Awards

- ❖ Special Awards are sponsored by government agencies, businesses and individuals. Awards ranging from cash - to t-shirts to plaques in many different areas are awarded.

Discovery Channel Young Scientist Challenge

The top 10% of our Middle School projects are nominated for the Discovery Channel Young Scientist Challenge, a national middle school science competition.

Students then complete DCYSC paperwork to enter their project. In August DCYSC judges pick 400 semifinalists from the entries. Students are judged on the scientific merit of their work and on their ability to communicate the science of their project.

In September 40 finalists are chosen. They receive an all-expense-paid trip to Washington, D.C., for the competition finals in October, consisting of a series of team challenges and oral presentations conducted in the Smithsonian Institution's National Museum of Natural History and National Museum of American History. The winners receive scholarships from \$500 to \$15,000.

All the details are available at <http://school.discovery.com/sciencefaircentral/dyssc/>.



2008 Intel NWSE Middle School Student Preliminary Schedule

Thursday March 13, 2008	
5:00-9:00pm	Exhibit Set-up. Students do not need to be present.
Friday March 14, 2008	
10:30-12:00pm	Judging
12:00-1:15pm	Lunch break
1:15-2:15pm	Judging
2:30-3:30pm	Public viewing and visiting high school projects.
4:00-5:30pm	Middle School Award Ceremony in Main Gym.



Intel NWSE Contact information

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Regional Fairs Accepting 5-8th graders
 See www.nwse.org for boundary restrictions.

Aardvark Science Expo

Date: March 3, 2008
 Run by: Oregon Episcopal School
 Location: Portland, OR
 Grade levels: 6-12

Central Western Oregon Science Expo

Date: February 22 & 23, 2008
 Run by: Oregon State University
 Location: Monmouth, OR
 Grade levels: 5-12
 Website: www.3sigmainstitute.org

Southwestern Oregon Regional Science Expo

Date: March 1, 2008
 Run by: Southwestern Oregon Community College
 Location: Coos Bay, OR
 Grade levels: 5-12
 Website: www.socc.edu/sciencefair

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