



## 2009 Middle School Science Competition

Who: Middle school grade students (6<sup>th</sup>, 7<sup>th</sup> or 8<sup>th</sup> grade level – currently enrolled)

What: Science & Technology Competition

When: Monday 08/31/09

Where: Oregon State Fairgrounds in Salem, Oregon

Why: To foster Science & Technology education and innovation

### Summary:

The 2009 competition will comprise of middle school students currently enrolled in the 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade. The middle school grade competition will be a derivative of the current competition guidelines developed by Intel Northwest Science Expo (NWSE). The guidelines set forth by Intel NWSE were selected due to the familiarity and program awareness by Oregon Science Teachers.

There are several changes for the 2009 science competition. In 2008, the competition was open to 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> graders. In 2009, the science competition will be open to 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> graders. The categories have also been expanded to cover more competitive categories. In addition, the science competition will be entirely open-class. There is no longer a requirement to roll-up from a county fair.

### How to participate:

Enter directly through the Oregon State Fair Youth Open Class. Information on registration and required forms are available at the Oregon State Fair website [www.oregonstatefair.org/competition/science](http://www.oregonstatefair.org/competition/science). Participants who wish to participate but do not have access to the Oregon State Fair website can contact Jeff Trejo at the Oregon State Fair or Chris Steiner at the Hillsboro School District (see contact information at the end of the document).

### Entry Fee:

The fee for each project entry is \$5.00

### Competing Categories:

Youth Open – Middle School (grades 6, 7, and 8)

Students will also have the option of participating in one of two size categories. Students can select to participate in either individual/small team (1 to 3 people), or large team (4 or more people).

### How to begin:

The first thing to do is to fill out and submit a registration form no later than Friday July 31<sup>st</sup> 2009 (30 days prior to the competition). One registration form is needed per person.

The registration process provides general information and serves as notice of intent to compete. Next, each participant will need to fill out a project entry form and have it submitted for the competing category by Friday August 14<sup>th</sup> 2009. The project entry form provides clearance authorization and competing category detail. Be sure to fill out the project entry summary as much as possible even if final results are not known. The information compiled will allow for proper resource allocation at the time of competition.

**Only one entry per student** - student must select the size category (individual/small team or large team) and project category. Participating students then go to [www.oregonstatefair.org/competition/science](http://www.oregonstatefair.org/competition/science) and fill out both a registration form and a project entry form. Once complete, both forms can be faxed or mailed to the Oregon State Fair. Registration forms are due by 07/31/09 and Project Entry forms are due 08/14/09.

**For the competition:**

Contestants will need to provide a completed project entry form (includes project summary) and project procedures either posted or in a lab notebook. The lab notebook can also hold additional graphs and data tables.

The competition will be held on Monday 08/31/09 during fair. The winners in each respective category will be rotated and displayed during Oregon State Fair.

**Awards given at state fair level (individual/small team, large team):**

Oregon State Fair Youth Open – 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>

**Project Categories:**

**Biology** – Animal Sciences, Plant Sciences, Microbiology, Cellular and Molecular Biology

**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

**Computer Science and Math:** Study of 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.

**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

**Physics, Engineering, and Astronomy:** Theories, principles, and laws governing energy and the effect of energy on matter – solid state, optics, acoustics, particle, nuclear, atomic, plasma, superconductivity, fluid and gas dynamics, semiconductors, magnetism, quantum mechanics,

biophysics; Technology; projects that directly apply scientific principles to manufacturing and practical uses – civil, mechanical, chemical, electrical, material, thermodynamics, robotics, etc; Astronomy, study of celestial objects and phenomena originating outside the Earth’s atmosphere

A student may have only one project. Team projects are allowed and may be judged in large or individual/small team categories.

**Note:** Microbe Cultures, Human Subjects, Hazardous Chemicals, Hazardous Activities, and Hazardous Devices (includes laboratory equipment that requires a moderate to high level of expertise to ensure its safe usage) are not allowed.

### **Selecting a Category**

The key for selecting your category is the “Dependent Variable” – the thing that is being measured or 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 and this project would be under Biology/Plant Sciences. If the student examined how plant growth changes the composition of the soil, then the dependent variable is the composition of the soil and the project would be under Earth Sciences-soil sciences.

### **Rules for Projects**

#### **Vertebrate Animals**

Two types of Vertebrate animal projects are allowed:

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.
2. Behavioral projects for pets involving doing things that pets experience in every day life, i.e. new food dish, supplemental treats (following label recommendations), a new toy.

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:

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

Not Allowed – All other projects involving human and animal tissue, including those involving organs, non-sterilized teeth, blood and other body fluids.

## **Display Regulations**

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

Size requirements:

The following is recommended for the space available for the poster and any additional items:

- 30 inches deep
- 36 inches wide
- 78 inches high from top of table

Do not include at the display:

- Living organisms-plants or animals or dead parts of animals or plants (processed/dried 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, organizations, or School names are allowed.

### **Also allowed with restrictions:**

- Photographs – you must have permission to post a person’s picture or make the person unidentifiable. You must also list the source of any photographs. If you are using pictures obtained from the internet, there are special considerations.
- Electricity may be allowed with permission

### **Hints for a good poster:**

Good title – Your title is a very important attention getter. A good title should simply and accurately present your project and depict the nature of it. The title should be no longer than 10 words.

Nice Visuals – Photographs, drawings, charts and graphs that explain your project and results should be clear, well done and easy to understand.

Be organized – Make sure your display follows a sequence and is logical and easy to read. A glance should permit anyone (especially the judges) to quickly locate the title, summary, experiments, results and conclusions.

Clearly presented – Be aware that the font size needs to be large enough to read from 3 feet away. Make sure the poster has all the information the judges will need.

All exhibits need to have their entry form and project procedures either posted or in a lab notebook. The notebook can also hold additional graphs, data tables and useful background information.

**Presentation:**

Each project entry will require a participating representative(s) to present their science project and their findings to the judges during the competition.

**Judging:**

State Fair – Local science teachers

**Overall Judging Methodology:**

**Student’s involvement with science**

Introduction – Statement and identification of problem	20%
Acknowledgement of sources and major assistance received	10%
Research design, procedures (materials & methods), and results	20%
Discussion/Conclusions	20%

**Student’s effort and performance**

Duration of research – amount of work involved, Acknowledgment of major assistance and evidence of student’s understanding	10%
Presentation	10%
Abstract	<u>10%</u>
Total	100%

**Please note: Additional bonus points will be awarded to those projects that involve elements related to sustainability or renewable energy.**

**For more information:**

Oregon Science Teachers and participants are invited to contact the Oregon State Fair. General information and required forms will be posted at [www.oregonstatefair.org/competition/science](http://www.oregonstatefair.org/competition/science). Please direct any questions to Jeff Trejo at the Oregon State Fair or Chris Steiner at the Hillsboro School District.

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