Natrona County District Science Fair (grades 4 & 5)

When: February 1, 2020

Where: Verda James

Set up will be on Friday, January 31, 2020 between 5:00 and 6:00 p.m.

Late setup will be from 7:00 a.m. to 8:00 a.m. on Saturday, February 1st. Judging will begin at 8:45 and will continue until the judges have come to their decisions.

Feb. 1st schedule

7:00-8:00	Last minute **Project set up**
8:00-8:45	Judges meeting
9:00-12:30	Main judging
12:30-1:00	Special Awards judging
1:00-1:30	Public Viewing
1:30-2:00	Awards Ceremony
2:00	Projects may be removed

Grades 4 and 5 may choose to participate in one of the following categories:

- **Life Science**: zoology, botany, behavioral science, and ecology.
- **Physical Science**: chemistry, electricity, light, sound, energy, and mechanics.
- **Earth Science**: geology, space science, astronomy, oceanography, and meteorology
- **Consumer Science**: economics.
- **Computers and Mathematics**: software development, computer engineering.

  Team Projects (2-3 students in the same grade level forming a team) Team Projects can be in any of the above categories, and will be judged under the appropriate category only.

REGISTRATION DEADLINE is the Friday January 24, 2020.

Teachers please contact Rod Kennedy (rod312@myncsd.org) and let him know if you have students that will continue on to the District level Science Fair. He will send **you** a link for registration. Please do not have parents contact him individually.

I would highly recommend that students fill out the Form for 4th and 5th graders on page 3. Students in 4th and 5th grade do not need any further forms.

Science Fair Project Judging Criteria

Scientific Thought (50 points)

□ Is the problem clearly and concisely stated?
□ Did the student use appropriate literature for research before they began the project?
□ Is there a list of references?
□ Can the student clearly explain the variables and control?
□ Can the student clearly explain the procedures?
□ Did the student conduct multiple trials?
□ Is the collected information scientifically accurate and complete?
□ Is the data represented in a table or a graph?
□ Are the conclusions accurate and based on the results?
□ Can the student explain what they learned from the project?

Creative Ability (15 points)

□ Is the project unique?
□ Does the exhibit show original thinking or a unique method or approach?
□ Does the project demonstrate original ideas arrived at by the student?

Board Clarity (10 points)

□ Did the student clearly communicate the nature of the problem, how the problem was solved, and the conclusion?
□ Are the problems, procedures, data, and conclusions presented clearly and in a logical order?

Dramatic Value (10 points)

□ Are all of the components of the project done well?
□ Is the display visually appealing?

Technical Skill (15 points)

□ Was the majority of the work done by the student?
□ Does the project show effort and good craftsmanship by the student?
□ Does the written material show attention to grammar and spelling?

My problem or question:

Literature read:
*

*

The variable was:

The control was:

This is what happened (procedure):

Number of trials:

Data collected:

Table or Graph:

Conclusion:

Further questions:

Not permitted for display

1. **Living organisms, including plants**
2. Soil, sand, rock and/or waste samples even if permanently encased in a slab of plastic
3. Taxidermy specimens or parts
4. Preserved vertebrate or invertebrate animals
5. **Human or animal food**
6. Human/animal parts or body fluids (for example, blood, urine)
7. Plant materials (living, dead, or preserved) that are in their raw, unprocessed, or non-manufactured state (Exception: manufactured construction materials used in building the project or display)
8. All chemicals including water (Exceptions: water integral to an enclosed, sealed apparatus.)
9. All hazardous substances or devices [for example, poisons, drugs, firearms, weapons, ammunition, reloading devices, and lasers (as indicated in item 5 in the section of these rules entitled "Allowed at Project or in Booth BUT with the Restrictions Indicated")]
10. Dry ice or other sublimating solids
11. Sharp items (for example, syringes, needles, pipettes, knives)
12**. Flames or highly flammable materials**
13. Batteries with open-top cells
14. **Awards, medals, business cards, flags, logos, CD's, DVDs, flash drives, brochures, booklets, nor endorsements, and/or acknowledgments** (graphic or written) unless the item(s) are an integral part of the project (Exception: Intel ISEF medal(s) may be worn at all times.)
15. Photographs or other visual presentations depicting vertebrate animals in surgical techniques, dissections, necropsies, or other lab procedures
16. Postal addresses, World Wide Web and email addresses, telephone and fax numbers of Finalists
17. Active Internet or e-mail connections as part of displaying or operating the project at the Intel ISEF
18. Prior years' written material or visual depictions on the vertical display board. [Exception: the project title displayed in the Finalist's booth may mention years or which year the project is (for example, "Year Two of an Ongoing Study")]. Continuation projects must have the Continuation Project Form (7) vertically displayed.
19. Glass or glass objects unless deemed by the Display and Safety Committee to be an integral and necessary part of the project (Exception: glass that is an integral part of a commercial product such as a computer screen)
20. Any apparatus deemed unsafe by the Scientific Review Committee, the Display and Safety Committee, or Society for Science & the Public (for example, large vacuum tubes or dangerous ray-generating devices, empty tanks that previously contained combustible liquids or gases, pressurized tanks, etc.)

Remember: The purpose of the display is to show the results of an experiment, not to conduct the experiment. Leave items used in the experiment and props at home. Rely on your backboard and report to communicate the results and capture the judges' attention. Use written reports, tables, graphs, and photographs to show equipment, its operation, and your results.

Potentially Hazardous Biological Agents

3) Prior review and approval is required for the use of potentially hazardous microorganisms (including bacteria, viruses, viroids, prions, rickettsia, fungi, and parasites), recombinant DNA (rDNA) technologies or human or animal fresh/frozen tissues, blood, or body fluids:

- a. An affiliated fair SRC, an IBC or an IACUC must approve all research before experimentation begins. The initial risk assessment determined by the student researcher and adults supervising the project must be confirmed by the SRC, IBC or IACUC.
- b. Experimentation involving the culturing of potentially hazardous biological agents, even BSL-1 organisms, is prohibited in a home environment. However, specimens may be collected at home as long as they are immediately transported to a laboratory with the BSL containment determined by the affiliated fair SRC.
- c. Research determined to be at Biosafety Level 1 (BSL-1) must be conducted in a BSL-1 or higher laboratory. The research must be supervised by a trained Designated Supervisor or a Qualified Scientist. The student must be properly trained in standard microbiological practices.
- Research determined to be a Biosafety Level 2 (BSL-2) must be conducted in a laboratory rated BSL-2 or above (commonly limited to a Regulated Research Institution). The research must be reviewed and approved by the Institutional Biosafety Committee (IBC) or a letter or document from the Regulated Research Institution that the research does not require review. The research must be supervised by a Qualified Scientist.
- e. Students are prohibited from designing or participating in an experiment associated with the following types of PHBA studies:
    - BSL-3 or BSL-4 Research
    - Culturing CRE (Carbapenem Resistant Enterobacteriacae)
    - Studies that genetically engineer bacteria with multiple antibiotic resistance
- f. Laboratory studies culturing known MRSA (Methicillin-resistant Staphlococcus aureus), VRE (Vancomycin-resistant enterococci) and KPC (Klebsiella pneumonia) must be conducted in a BSL-2 laboratory in a Regulated Research Institution with documented IBC Committee review and approval.
- g. Extreme caution must be exercised when selecting and sub-culturing antibiotic-resistant organisms. Studies using such organisms require at least BSL-2 containment.
- h. Naturally-occurring plant pathogens may be studied (not cultured) at home, but may not be introduced into a home/garden environment.
- i. The culturing of human or animal waste, including sewage sludge, is considered a BSL-2 study.
- j. All potentially hazardous biological agents must be properly disposed at the end of experimentation in accordance with their biosafety level. For BSL 1 or BSL 2 organisms: Autoclave at 121 degrees Celsius for 20 minutes, use of a 10% bleach solution (1:10 dilution of domestic bleach), incineration, alkaline hydrolysis, biosafety pick-up and other manufacturer recommendations are acceptable..
- k. Any proposed changes in the Research Plan by the student after initial local or affiliated fair SRC approval must undergo subsequent SRC or IBC review and approval before such changes are made and before experimentation resumes.

4) If you choose to include hazardous materials in your project, the following forms are required:

- Checklist for Adult Sponsor (1), Student Checklist (1A), Research Plan, and Approval Form (1B)
- Regulated Research Institution Form (1C) - when applicable.
- Qualified Scientist (2), when applicable
- Risk Assessment (3), when applicable
- PHBA Risk Assessment Form (6A), when applicable
- Human and Vertebrate Animal Tissue Form (6B) – for all studies involving tissues and body fluids.

A. Additional Rules for Projects Involving Unknown Microorganisms

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.)

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 two heavy-duty (2-ply) sealed bags.
- b. Experiment involves only procedures in which the Petri dish remains sealed throughout the experiment (e.g., counting presence of organisms or colonies).
- c. The sealed Petri dish is disposed of via autoclaving or disinfection under the supervision of the Designated Supervisor.

2) If a culture container with unknown microorganisms is opened for any purpose, (except for disinfection for disposal), it must be treated as a BSL-2 study and involve BSL-2 laboratory procedures.

If you have any questions, call Michele Wistisen at 577-0310