KENTUCKY AMERICAN WATER

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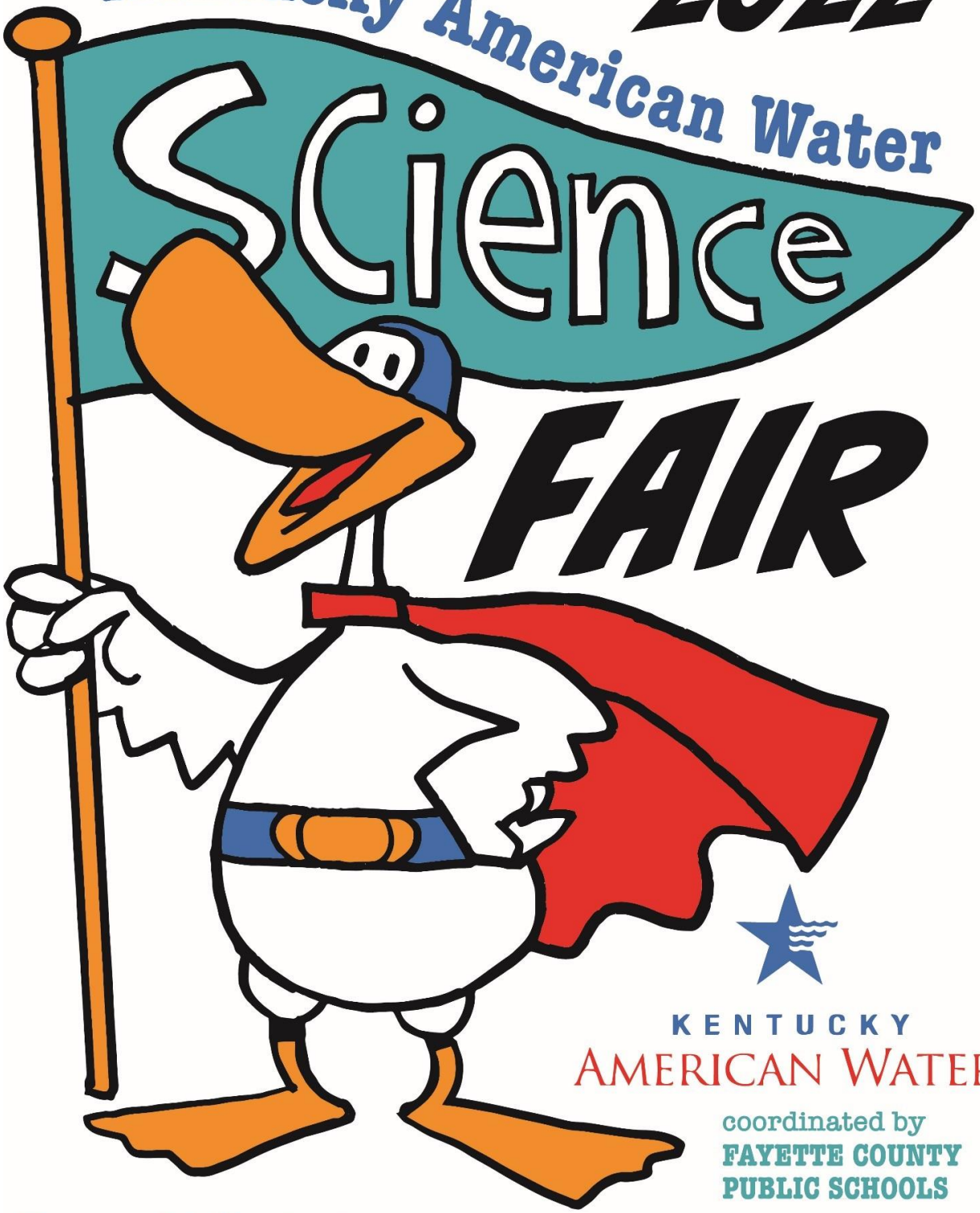
FAYETTE COUNTY PUBLIC SCHOOLS

Kentucky American Water 2022 Science FAIR



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coordinated by
FAYETTE COUNTY PUBLIC SCHOOLS

AmplifyScience

Frederick Douglass High School
Saturday, February 12, 2022

Who is eligible to enter?

All 4th through 12th grade students currently enrolled in the Fayette County Public Schools or in a private school within Fayette County are eligible to enter a project. The number of projects from each school will be limited. The school science fair coordinator must recommend each project.

What kinds of projects are allowed?

Projects must be scientific investigations, not demonstrations. Collections or displays that do not involve an experimental question are not eligible. Each project will be entered into one of the following categories:

- Animal Sciences
- Behavioral & Social Sciences
- Biochemistry **
- Cellular & Molecular Biology***
- Chemistry
- Computer Science **
- Earth & Planetary Science
- Engineering
- Energy & Transportation ***
- Environmental Sciences
- Medicine and Health***
- Microbiology
- Physics & Astronomy
- Plant Sciences

High School only Categories * Middle and High School Only

What are the entry rules?

1. The **student's teacher** must enter the Student Project Data through the **Science Fair website** by **5:00 PM on Friday, January 28, 2022 when the registration site will be closed – there will be no late entries.**

2. Private school and home school students must send completed entry forms to David Helm, K-12 Science Instructional Specialist at 450 Park Place, Lexington, KY 40505 (hand delivery to 450 Park Place) (you may scan and email entries also to david.helm@fayette.kyschools.us) no later than **5:00 PM on Friday, January 28, 2022.**

3. Projects may be the work of a single student or of a team of 2 or 3 students. A student/team may enter only one project in the science fair.

4. All exhibits must be placed in and removed from the exhibit area at the times specified. **Students MUST be present for the judging.**

Neither Kentucky American Water nor the Fayette County Public Schools assume any responsibility and/or liability for loss or damage to any exhibit or part thereof; not for personal injuries to exhibitors, or other persons arising out of or related to work on, exhibiting, or viewing projects.

Who should I talk to if I have questions?

If you need more information about the Science Fair, or doing a project, talk to your science teacher or the science fair coordinator at your school. You may also contact:

David Helm, K-12 Science Instructional Specialist 859-608-3781
Office: Fayette County Public Schools
450 Park Place
Lexington, KY 40505
Email: david.helm@fayette.kyschools.us

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What are the rules for the projects?

1) The student must do all work on the project's experimental procedure, data collection, and data analysis. The judges will disqualify projects that indicate the direct assistance of individuals other than the student. Teachers, parents, or other persons may advise and provide technical assistance, but may not be involved in the actual work of the project.
2) Exhibits must fit within a space of 45 cm (1.5 ft.) front to back and 75 cm (2.5 ft.) side to side, and be less than 180 cm (6 ft.) tall.
3) Only table space will be provided at the fair. Exhibits must be free standing with their own means of support.
4) If electricity is used in the exhibit, all switches, cords, and other devices must be of an approved variety. Students must supply their own extension cord, at least six (6) feet long. Electrical outlets will be available only if requested on the project entry form.
5) The student's name and school affiliation must not be visible until after the judging is complete.
6) Record books outlining the purpose of the project, procedures used, source of data and information, etc., must be available for examination by the judges. Daily/periodic logs are highly recommended as a part of the Record book.
7) Projects in all grades are prohibited from using vertebrate animals in experiments that would result in injury, discomfort or death of the organism. Use of vertebrate animals in grades 4-12 must strictly adhere to the I.S.E.F. guidelines on animal experimentation. If in the opinion of the judges a project violates this rule, it will be disqualified.
8) According to I.S.E.F. rules, the following items may not be included in the project exhibit under any circumstances (display drawings or photographs are allowed instead):
   a) Live animals (vertebrate or invertebrate), including humans.
   b) Plants.
   c) Preserved vertebrate animals or parts.
   d) Live pathogens, microbial cultures or fungi, i.e. bread mold, etc.
   e) Open flames.
   f) Chemicals (even water).
   g) Any other materials hazardous to the public.

   A teacher must approve any projects in these categories before a student begins research. Students must submit research plan 1A and 1B to the teacher before the start of the project. Vertebrates are subject to rule 7 listed above. Please pay particular attention to any project with human subjects (including surveys).
9) Go to the following website to view guidelines for projects involving any of the above topics : https://ruleswizard.societyforscience.org/ 10. Projects not meeting these guidelines will not be eligible to win at the District Science Fair and therefore not qualified to participate at the regional, state, or international levels.

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What awards will be given?

Projects at each grade level will be judged separately.
Awards will be given according to the judges' evaluation of each project, based on the criteria listed in the judging sheet. The decision of the judges is final. Medals, ribbons, or certificates will be awarded to all projects in each grade level/subject area category. The outstanding project in each of the grade levels and subject areas will receive special recognition. Kentucky American Water Company will also sponsor special awards for "Outstanding Water Projects Involving Water Science" in each grade level 4-8 and one award for grades 9-12.

What are the judging criteria?

All science fair entries will be judged on criteria aligned with the Next Generation Science Standards/Kentucky Academic Standards for Science, Science & Engineering Practices as well as project display and presentation.

Asking Questions and Defining Problems Students at any grade level should be able to ask questions of each other about the texts they read, the features of the phenomena they observe, and the conclusions they draw from their models or scientific investigations. For engineering, they should ask questions to define the problem to be solved and to elicit ideas that lead to the constraints and specifications for its solution. (NRC Framework 2012, p. 56)

Developing and Using Models Modeling can begin in the earliest grades, with students' models progressing from concrete "pictures" and/or physical scale models (e.g., a toy car) to more abstract representations of relevant relationships in later grades, such as a diagram representing forces on a particular object in a system. (NRC Framework, 2012, p. 58)

Planning and Carrying Out Investigations Students should have opportunities to plan and carry out several different kinds of investigations during their K-12 years. At all levels, they should engage in investigations…(NRC Framework, 2012, p. 61)

Analyzing and Interpreting Data …data must be presented in a form that can reveal any patterns and relationships that allows results to be communicated to others. Because raw data as such have little meaning, a major practice of scientists is to organize and interpret data through tabulating, graphing, or statistical analysis. (NRC Framework, 2012, p. 61-62)

Using Mathematics and Computational Thinking Although there are differences in how mathematics and computational thinking are applied in science and in engineering, mathematics often brings these two fields together by enabling engineers to apply the mathematical form of scientific theories and by enabling scientists to use powerful information technologies designed by engineers. (NRC Framework, 2012, p. 65)

Constructing Explanations and Designing Solutions The goal of science is to construct explanations for the causes of phenomena. Students are expected to construct their own explanations, as well as apply standard explanations they learn about from their teachers or reading. (NRC Framework, 2012, p. 52)

Obtaining, Evaluating, and Communicating Information Any education in science and engineering needs to develop students' ability to read and produce domain-specific text. (NRC Framework, 2012, p. 76)

Following all Safety Guidelines during the Science Fair Process

Exhibit is Visually Appealing and Shows Evidence of Being Student's Own Work

Journal/Lab Notebook Contain Experimental Records

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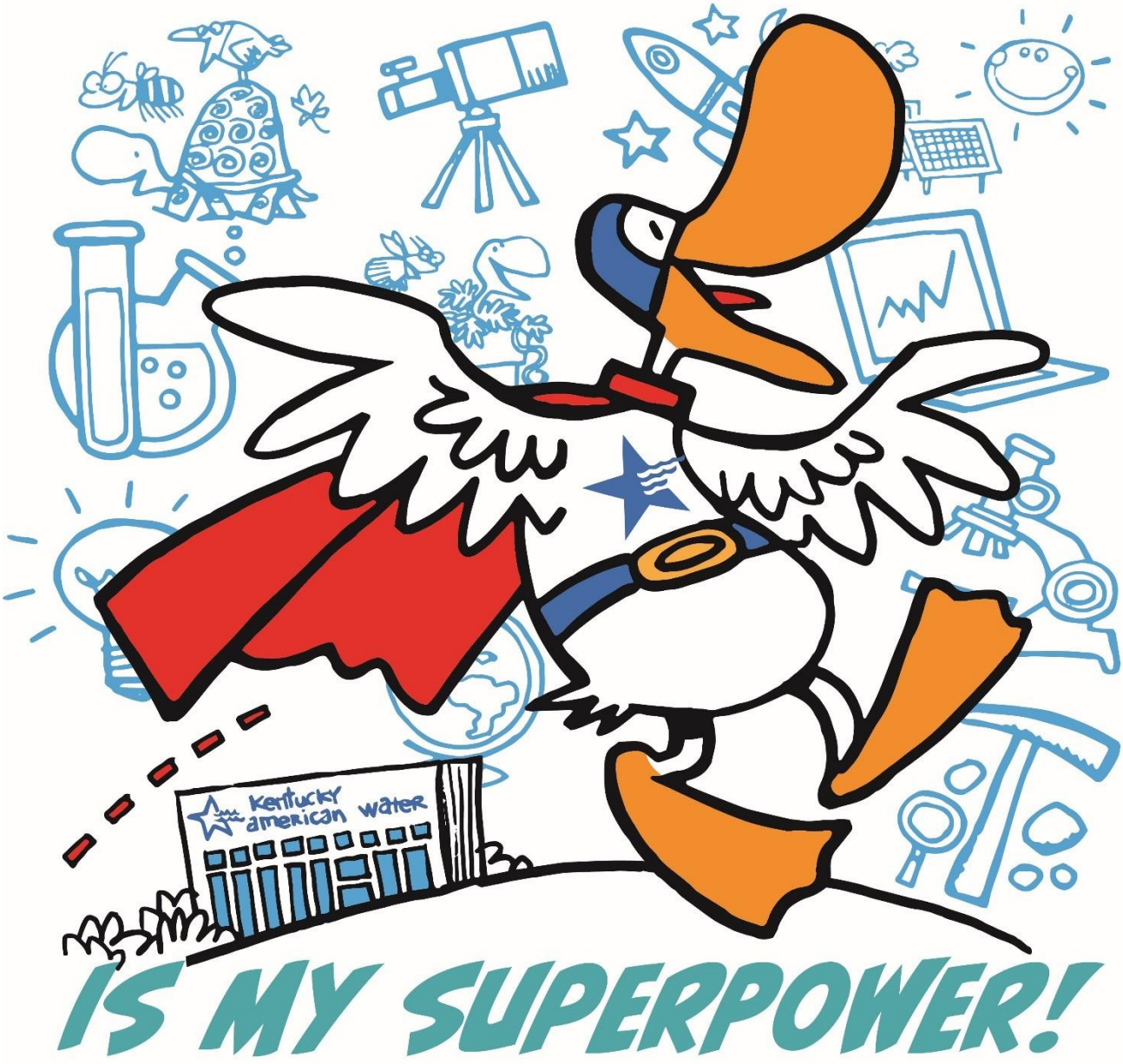
SCIENCE



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