

**It's all Chemistry: Solving the Problems of Tomorrow Using the Fundamentals of Forces and Interactions**

As part of the *You Be The Chemist Challenge*®, teams will create a video in which they form a start-up company to investigate the concept of **forces and interactions** connected to fundamental chemistry principles focused on **solving the problems of tomorrow**. Videos should introduce the start-up as a company, discuss who is part of the company's team, and present a problem the company is solving using chemistry. Videos should address how specific concepts of chemistry and forces and interactions explain the problem and solution.

**Your video must:**

1. Be 5-7 minutes in length. Videos shorter than 5 minutes or longer than 7 minutes will not be scored. Videos that are sped up or at an increased speed will not be scored.
2. Introduce your start-up company in the chemistry field
  - a. State your company mission
  - b. Describe the company role as it relates to chemistry
  - c. Present careers and roles from different organizational levels within the company that contribute to its success
    - i. Must present at least three careers
    - ii. Careers must be connected to your problem/solution
    - iii. Careers must represent workers from skill-trades/ certifications and degreed positions
3. Explain the problem your team has chosen
  - a. Include details describing the **forces and interactions** involved and the related core chemistry concepts within the problem
  - b. Describe the personal, local, global, or environmental impact of the problem
  - c. Connect identified careers to problem
4. Present an innovative solution
  - a. Include details describing the **forces and interactions** involved and the related core chemistry concepts within the solution
  - b. Describe how your company is addressing sustainability in its solution
  - c. Include a diagram, drawing, or picture of the company's solution
  - d. Share the strengths and obstacles in implementing or creating your solution
  - e. Connect identified careers to solution
5. Opening and closing titles
  - a. Opening titles must include video title, concept, school name, and team ID.
  - b. Closing titles must include school, student names (first names and last initials), and team member contributions
  - c. Opening and closing titles should be a maximum of 10 seconds in length each.
6. Be submitted along with a completed [Video Storyboard Template](#).
  - a. Storyboard Template must include citations in APA format

**Research Topics:**

The concept banks below provide suggestions for possible research topics for your team's competition video. **These concept banks are not an exhaustive list**, and many topics are not included. Your team is not required to use any of the below suggestions in your video; rather, the concept banks serve as inspiration for possible topics to explore in your video. Whatever topic you choose, whether it is from this list or not, it is your team's responsibility to connect that topic and your research to the video prompt.

**Key Concept Banks:**

Forces and Interactions: Acceleration, Atmospheric Pressure, Atoms, Chemical Bonding, Compounds, Contact Forces, Covalent Bonding, Electronegativity, Electrostatic Force, Elements, Energy, Force, Gas Pressure, Hydrogen Bonding, Ionic Bonding, Ions, Magnetism, Mass, Matter, Metallic Bonding, Motion, Nucleus, Newton's Second Law, Newton's Third Law, Non-Contact Forces, Pressure, States of Matter, Static Electricity, Thrust

Company Role in Industry: Agriscience, Chemical Distribution, Chemical Engineering, Chemical Manufacturing, Energy Production, Health & Safety, Oil and Gas, Regulatory Compliance, Research Institute, Water Management/Treatment, Quality Assurance and Control

Careers: Accountant, Analytical Chemist, Biochemist, Chemist, Chemical Engineer, Conservation Technician, Delivery Driver, Equipment Operator, Electrician, Engineer, Farmer, Finance Director, Graphic Designer, Installation Specialist, Iron Worker, Lab Technician, Maintenance Technician, Marketing and Communications Specialist, Mechanic, Operations Manager, Pharmacologist, President, Project Manager, Quality Specialist, Sales Manager, Service Technician, Warehouse Associate, Welder

**Additional Requirements:**

1. Format and resolution
  - a. Videos should be saved in .mp4 – a universal video format that is viewable on all platforms
  - b. Resolution should be at least 640 x 480 pixels (HD is 1920 x 1080)
2. Original content and copyrighted material
  - a. A bibliography listing all sources used in researching and creating the video in APA format must be included in the end titles of the video. Please refer to [this resource created by Science Buddies®](#) for more step-by-step directions on creating a bibliography.
    - i. Source list must include title, author, publisher, and copyright date
    - ii. Bibliography must also include internet sources, interviews, images, and videos
  - b. All content must comply with copyright rules and regulations. We advise that students use wholly **original** content in their videos to avoid violation of copyright. However, if using anything other than original content in your video, be sure that one of the following applies:
    - i. It is in the public domain, meaning it was published in 1922 or earlier; however, be sure that the particular *performance* of the song you are using is in the public domain. For example, a performance of “Twinkle, Twinkle Little Star” by Taylor Swift probably has its own copyright protections, but you could perform the song with your team and use it freely. For more information about what is in the public domain, visit <https://www.pdinfo.com/public-domain-music-list.php>.
    - ii. It has a Creative Commons Attribution license. This license allows you to use a particular work as long as you credit the original author/performer. Be careful when researching a work’s particular Creative Commons license and be sure it is a Creative Commons *Attribution* license. Visit <https://creativecommons.org/licenses/> for more information.
    - iii. It is completely royalty-free. If an original author/composer allows their work to be used without restrictions, this is royalty-free. Websites that offer royalty-free music will usually indicate this, so be sure to look for the licensing of a particular work you are interested in using. **Be careful!** If a song, image, etc. is “royalty-free for educational use,” you may **NOT** use it in your video submission because the prizes for the *You Be The Chemist Challenge®* have monetary value which invalidates educational use.
3. Non-team member contributions
  - a. Adult and/or other non-team member involvement in the video competition must be minimal. Challenge Organizers, Coordinators, teachers, parents, and other non-team members cannot actively participate in the research, storyboarding, filming, or editing of any parts of the project.
  - b. Non-team member contributions to the storyboard and video may *only* include:
    - i. Helping to organize the team
    - ii. Supporting time management
    - iii. Providing critical feedback or highlighting factual errors
      1. Non-team members may point out factual inaccuracies or explanations that are confusing or convoluted, **BUT** they may **NOT** contribute ideas, or provide solutions at the risk of disqualifying a team. (*Note – this can include pointing out factual errors but NOT correcting those factual errors. Students should be directed to re-check facts or do more research on a specific explanation if an adult sees a misconception or specific factual error.*)
  - iv. Providing meeting places
  - v. Ensuring safety

1. Adults may instruct students on how to use tools—including lab materials, hardware, and software needed to create the project, **BUT** they may **NOT** actively work on the project.
  - vi. Giving encouragement
  - vii. Acting as extras in video

**Video Submission:** <https://youbethechemist.submittable.com/submit/234857/2022-2023-video-challenge>

Videos may be submitted by **March 6, 2023** at 11:59pm eastern time. Team Coordinators will receive Team Identifiers to use when submitting videos.