

## IMPORTANCE OF HANDS-ON LABORATORY SCIENCE

Hands-on laboratory science experiences are critical to the learning process across all areas of study, beginning with kindergarten and continuing through post-secondary education. Research has shown that students who engage in well-designed laboratory experiences develop problem-solving and critical-thinking skills, as well as gain exposure to reactions, materials, and equipment in a lab setting. Sustained investments in hands-on experiences help inspire students to further their education and prepare them for high-technology careers by fostering skills sought by potential employers.

Hands-on experiences significantly advance learning at all levels of science education when appropriately designed and guided by qualified educators. During hands-on chemistry activities, students directly and safely investigate chemical properties and reactions, utilizing laboratory apparatus and instruments. These activities are essential for learning chemistry and improving science literacy. Web-based and computer-simulated activities may help increase student exposure to chemistry, reduce costs, and eliminate hazardous waste and safety concerns; however, these tools cannot be considered as equivalent replacements for hands-on laboratory experiences.

The Society believes that there is no equivalent substitute for hands-on activities where materials and equipment are used safely and student experiences are guided. The Society supports sustained investments to provide the facilities, equipment, curricula, and professional development needed for effective hands-on laboratory science experiences from kindergarten through post-secondary education.

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The American Chemical Society (ACS) Board of Directors Committee on Public Affairs and Public Relations adopted this statement on behalf of the Society at the recommendation of the Society Committee on Education. ACS is a non-profit scientific and educational organization, chartered by Congress, with nearly 157,000 chemical scientists and engineers as members. The world's largest scientific society, ACS advances the chemical enterprise, increases public awareness of chemistry, and brings its expertise to state and national matters.

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