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Food Science

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James Swart, MS
Grocery Manufacturers Association, Science and Education Foundation
Education Program Manager
1001 19th Street, N
Arlington, VA 22209

Re: Safety Protocols for "Hands-On: Real-World Lessons for Middle School Classrooms"

Dear Mr. Swart

I have carefully review the safety protocols written into *Hands-On: Real-World Lessons for Middle School Classrooms* science laboratory and the directions to teachers/instructors. These procedures include:

- Wiping down all surfaces before and after the laboratory with disinfectants provided in the supply kit provided to teachers/instructors
- The use of non-allergenic disposable gloves (provided in the supply kit) to all students and teachers/instructors and how to use and dispose of them properly
- The instructions to students that no food is allowed in the classroom and all coasts and lunches must be stored outside the science laboratory.
- The training of teachers/instructors in how to teach the laboratories by Hands-On personnel
- All plates are sealed with Parafilm, a polymeric material that prevents accidental release of microorganisms and aerosols
- Teachers/Instructors are trained to observe Petri plates and to eliminate any that contain mold
- The instructions on the use of transfer devices, recapping of used loop bags, use of
 wooden clothes pens as holders, and procedures to make a smear for a Gram stain
 including the use of crystal violet stain ensures the death of any microorganisms on the
 stain and that students do not contaminate themselves
- The disinfection of all Petri plates and other articles (like gloves) used with sodium hypochlorite disinfectant that is supplied with the supply kit
- A hand washing sink is provided and used by all teachers/instructors and students before leaving the classroom
- No "sharps" are used in the laboratories
- All tables/desks are wiped down with disinfectant after experiments
- Classroom doors remain closed when students are performing experiments

The type of science laboratory exercises being conducted under *Hands-On: Real-World Lessons* for *Middle School Classrooms* are considered Level I biosafety (BSL-1) by the Centers for Disease Control and Prevention (CDC). The protocols indicated above that are used and taught to teachers/instructors in *Hands-On: Real-World Lessons for Middle School Classrooms* exceeds

the precautions currently recommended by CDC in Biosafety in Microbiological and Biomedical Laboratories (BMBL), 5th Edition, which is followed by all scientific agencies in the United States. The definition of Biosafety Level 1 by CDC is "procedures appropriate for undergraduate and secondary education training or teaching laboratories"; work is done with well characterized microorganisms or for general cultivation of viable microorganisms not known to cause disease by with the understanding that many microorganisms can be opportunistic pathogens so precautions must be taken. BSL-1 represents a basic level of containment that relies on standard microbiological practices that also includes the use of gloves, hand washing skin, and a door with controlled access. Standard microbiological practices for BSL-1 are detailed in the CDC BMBL and include: laboratory supervisor must enforce policies that control access to the laboratory; persons must wash hands after working with potentially hazardous materials and before leaving; eating, drinking, smoking, handling contact lenses, applying cosmetics, and storing food for human consumption is not be allowed; mouth pipetting is prohibited; if sharps are used, proper polices need to be created and followed; try to work to reduce splashes and/or the formation of aerosols; decontaminate work area (i.e., desks, chairs, tables) after completion of experiment or after any spill or splash; decontaminate all cultures, stocks, and other potentially infections material (i.e., Petri plates and gloves) using an effective method, like bleach; and laboratory supervisors ensure all personnel have received adequate training.

As a biosafety trained researcher and instructor, who trains undergraduate students for biosafety compliance for a 400-level food microbiology course, and based on my knowledge and experience, the guidelines established by *Hands-On: Real-World Lessons for Middle School Classrooms* and followed by teachers/instructors of *Hands-On: Real-World Lessons for Middle School Classrooms* meet or exceed those recommended by CDC to ensure safety of all conducting the experiment.

Please let me know if you need protocols reviewed for safety in the future. I will gladly assist you. I would recommend that you add the following guideline to *Hands-On: Real-World Lessons* for *Middle School Classrooms*: "any students or teacher/instructor who is immune compromised due to current chemotherapy or radiation treatment, organ transplant, or pregnancy should be excused from laboratories." While spread of pathogens are unlikely due to the precautions set in place within the curriculum, these individuals would be highly susceptible to the viral or other illness, which are rampant within a school; however, teachers/instructors should have the guidance to ensure this is not overlooked.

Sincerely,

Molly A. West, MS

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