

# Visitor Safety for Programs, Events, and Demonstrations



**Interactivity 2019**

# Why are we here?

Safety is a big topic with sometimes overwhelming topics and considerations.



# Why are we here?

Today let's zoom into everyday safety topics that are also important.

Demonstrations

Big events

Crowd control

Community partners

# Presenters

**Cheryl McCallum, EdD**

Children's Museum of Houston

**Phil Rechek**

Children's Museum of Eau Claire

**Jon Handwork**

Children's Museum of Denver  
at Marsico Campus

**David Sittenfeld**

Museum of Science, Boston

**Moderator: Darrell Porcello, PhD**

Children's Creativity Museum





**Cheryl McCallum, EdD**  
**Director of Education**  
Children's Museum of Houston





A Playground for Your Mind™

800,000





# X-treme Spring Break





# Pi Fight on Pi Day





# New Years Noon





# New Years Noon





# Science Demo





# Post Science Demo





**WARNING!**



# Safety Considerations with Community Partnerships



Philip Rechek

Vice President of Operations

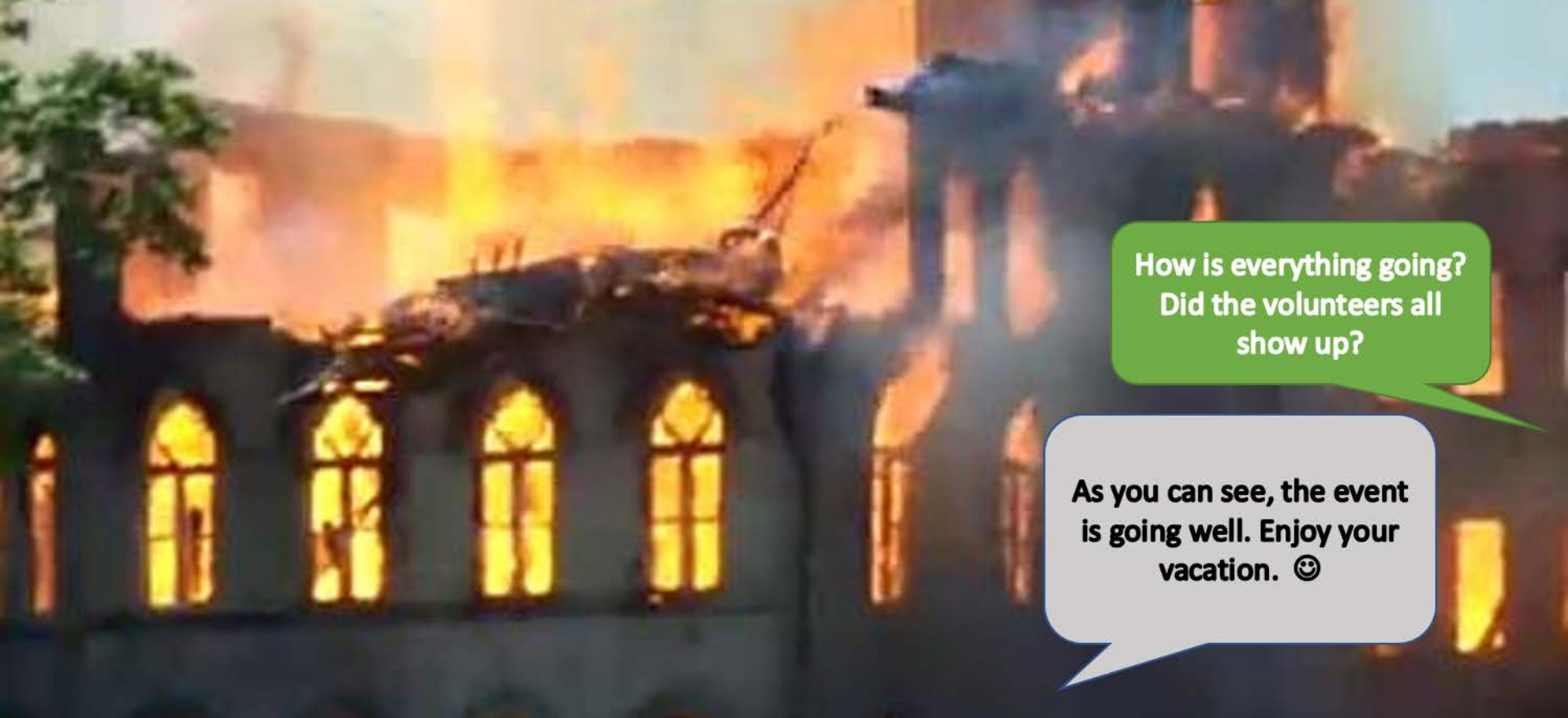
Children's Museum of Eau Claire

Eau Claire, WI



# Types of Volunteers

	Individuals	Special Event Volunteers	Community Organizations
Background Check/ Training	Yes/Yes	No/Very Little	No/No
Frequency of volunteering	Multiple times	Single time	Single time



How is everything going?  
Did the volunteers all  
show up?

As you can see, the event  
is going well. Enjoy your  
vacation. 😊

# Special Events Volunteers



# Special Event Volunteers

## Pre Event

- Ask lots of questions
- Verify numbers
- Identify leadership
- Prepare specific task using accordion approach

## During Event

- Identify groups as needed
- Allow time for questions
- Make them identifiable
- Monitor for problems
- Reassign tasks/groups as need



# Outside Experts/ Demonstrations

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# Community Demonstrations

## Pre Event

- Ask lots of questions
- Specify questions to the event/safety concerns
- Identify leadership
- Identify special requirements
- Verify setup/take down

## During Event

- Check in with coordinator
- Inspect demo before start
- Have staff present
- Ensure equipment is not left alone





Partnering with EMS services

MOD Leadership Program  
Crowd Control  
Managing School Group Safety

Jon Handwork –Children’s Museum of Denver at Marsico Campus

# Visitor Safety Preparation & Day of Response

Proactive Manager on  
Duty – Leadership  
Program





# Crowd Control



# Managing School Group Safety





# Explore Science: Let's Do Chemistry Safety



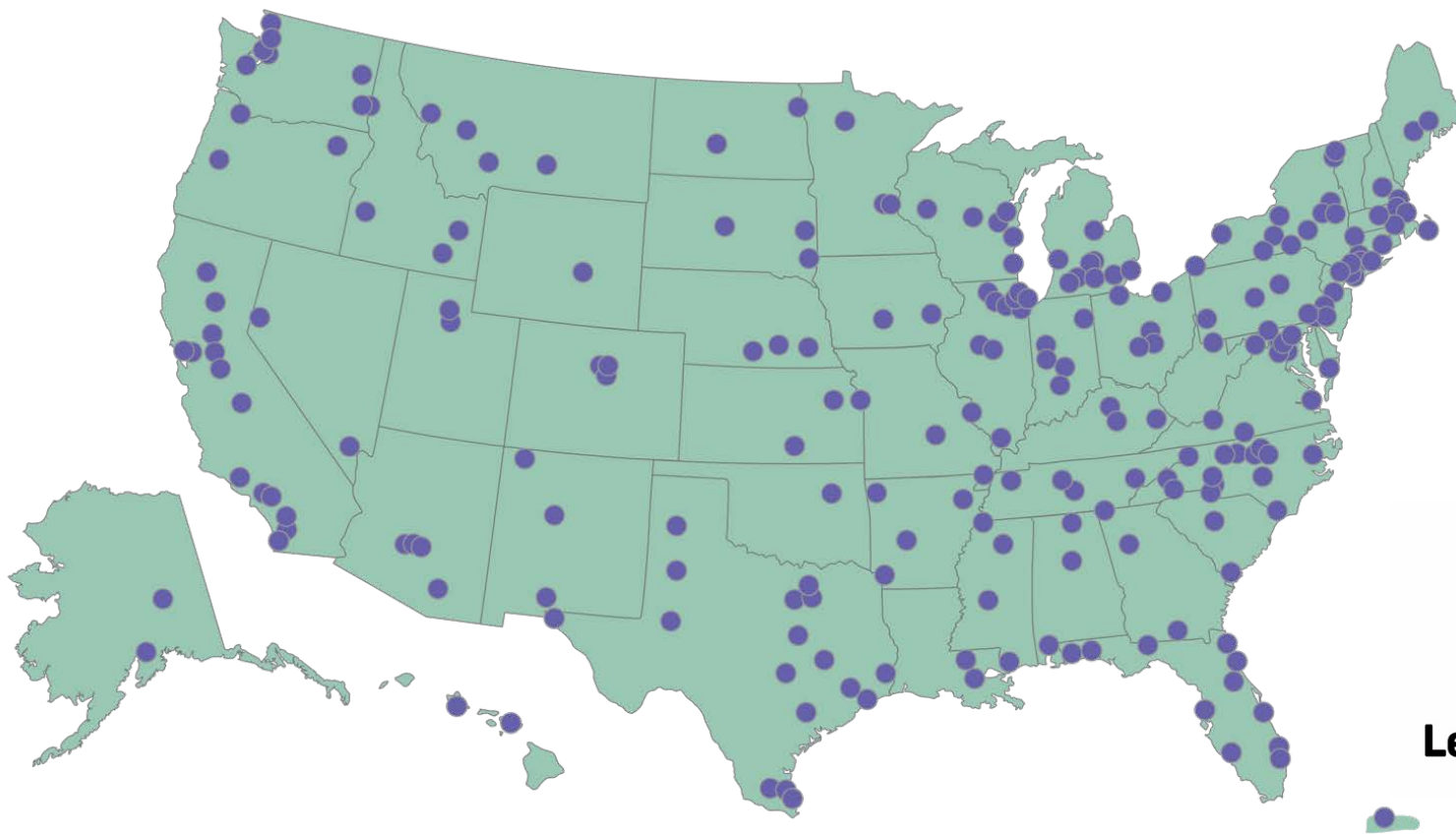
**David Sittenfeld,**  
**Museum of Science, Boston**  
ACM National Meeting  
Denver, Colorado







# Explore Science: Let's Do Chemistry kits



**NISE**  
NATIONAL INFORMAL  
STEM EDUCATION  
NETWORK



EXPLORE SCIENCE  
**Let's Do Chemistry**

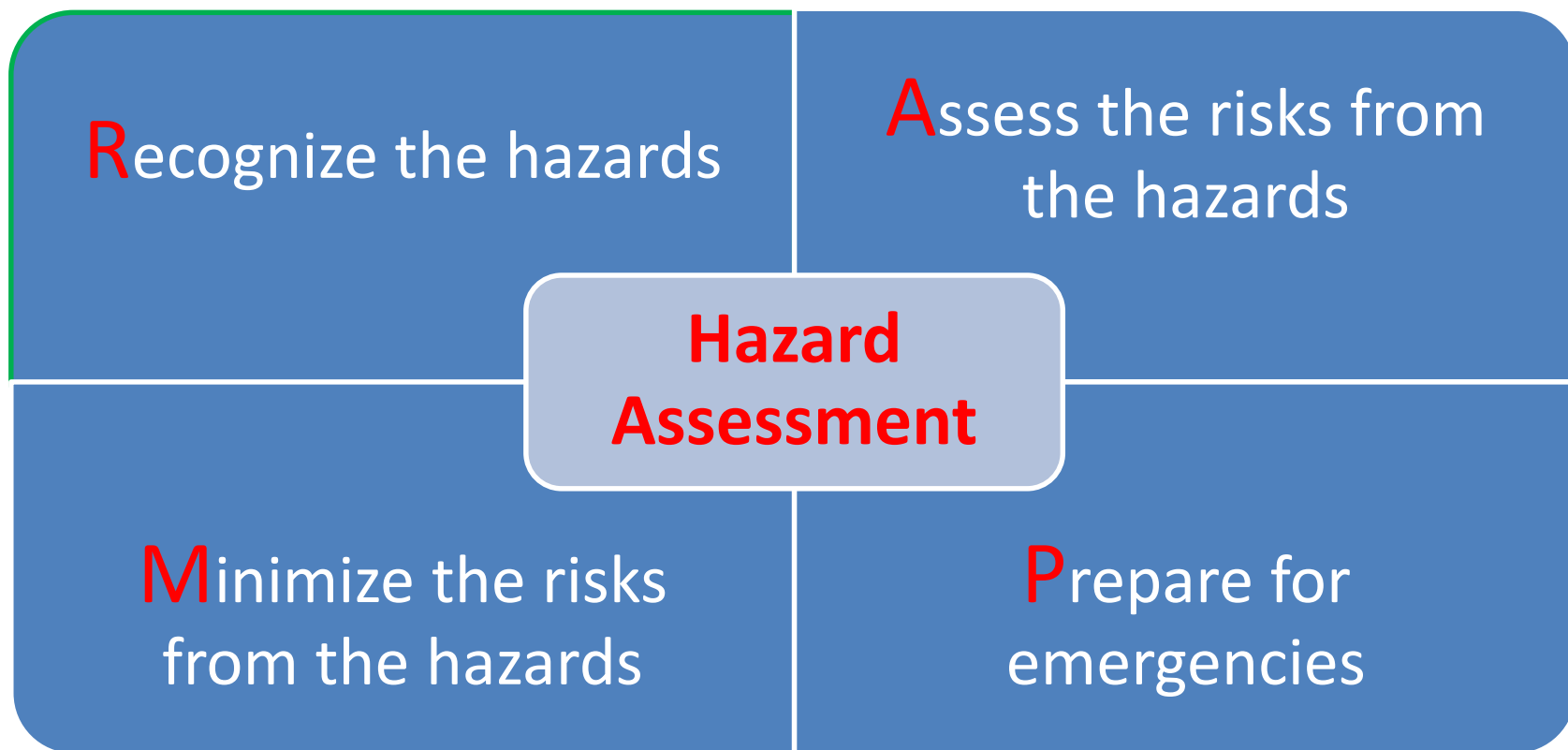
250 physical kits distributed across the US  
museums, universities, ACS Local Sections & Student Chapters

# LDC Events across the United States





# Moving Beyond Safety Rules – “RAMP”-ing Up for Safety



Developed by Robert E. Hill and David F. Finster in their textbook, *Laboratory Safety for Chemistry Students*

# Explore Science: Let's Do Chemistry Safety

- What **hazards** exist?
- What associated **risks** may arise from these hazards?
- How can we **minimize** risks through protocols we have designed into the activities and training materials?
- How should **safe practices and protocols** best be **communicated** with facilitators, visitors, and others?



# Explore Science: Let's Do Chemistry

## Chemical Safety Resources



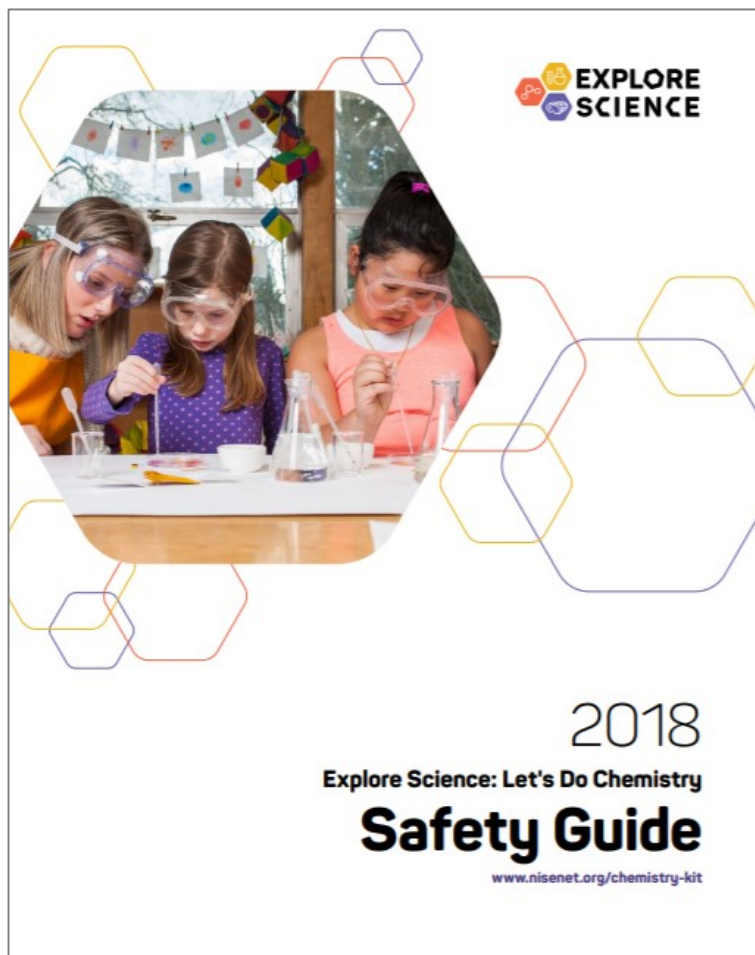
Science Museum of Minnesota

- Chemical Safety Guide
- Activity Guides
- Training Videos
- Personal Protective Equipment/tools (for visitors & facilitators)





# Safety Guide



## Safety Guide

Use this guide as you plan your Let's Do Chemistry event and as a resource before training, demonstrating, or facilitating the activities.

### Guide covers:

- Let's Do Chemistry kit safety practices and protocols
- General chemistry safety guidelines, protocols, and precautions
- Additional safety tips
- Chemistry materials and supplies
- Additional resources

# Safety Guide Objectives

## The Guide Is Intended to:

- **Prepare** the event organizer for the safety information embedded into each individual activity's training and facilitation materials,
- **Communicate** strategies, protocols, and practices that will be important when preparing for, hosting, and cleaning up from the event, and
- **Assure and instill confidence** in event organizers about hosting their event from a chemical safety perspective.
- **Provide resources** on the topic of chemical safety, if the host/organizer wishes to do more chemistry activities at their institution.



# Guidelines, Protocols, & Precautions

– Preparing and Doing the Activities



– Engaging in Chemistry Activities with Visitors and Children



– Training and Working with Facilitators and Guest Educators





# Orienting Organizers to Safety Information: Rocket Reactions

## SAFETY

- All facilitators and participants must **wear safety goggles** during this activity. While baking soda and citric acid are commonly handled household materials, these substances and the products of the chemical reaction can splash into someone's eye and the caps can move quickly through the air.
- Modeling good safety practices is an important learning goal for chemistry activities.
- The kit includes two different sizes of safety goggles (adult and child). Fit the appropriate size goggle to each participant. For very small children, you may need to use a binder clip to make the headband fit more snugly. Fold the band over itself and secure it in place.
- All beakers should be labeled with the correct chemical names.

## CLEAN UP

- Rinse any dirty tubes and caps.
- Dump out extra water.
- Empty the extra citric acid and baking soda into their respective containers if they are dry and you are certain there has been no cross contamination.
- If the rockets have splashed onto the floor around your location, you can mop up the area or wait for the materials to dry and then sweep or vacuum.

## FACILITATION NOTES

- This activity makes a great connection to the 2018 National Chemistry Week theme: Chemistry is Out of This World! If participants are interested, encourage them to explore the information sheet about how real rockets are fueled and launched. (Hint:



EXPLORE SCIENCE  
**Let's Do Chemistry**

LET'S DO CHEMISTRY

# Sublimation Bubbles



LET'S DO CHEMISTRY

# Oil Spills





# Principles of Green Chemistry/ Additional Resources

**Green Chemistry Pocket Guide**

**The 12 Principles of Green Chemistry**

Provides a framework for learning about green chemistry and designing or improving materials, products, processes and systems.

1. Prevent waste
2. Atom Economy
3. Less Hazardous Synthesis
4. Design Benign Chemicals
5. Benign Solvents & Auxiliaries
6. Design for Energy Efficiency
7. Use of Renewable Feedstocks
8. Reduce Derivatives
9. Catalysis (vs. Stoichiometric)
10. Design for Degradation
11. Real-Time Analysis for Pollution Prevention
12. Inherently Benign Chemistry for Accident Prevention

[www.acs.org/greenchemistry](http://www.acs.org/greenchemistry)

 ACS  
Chemistry for Life™

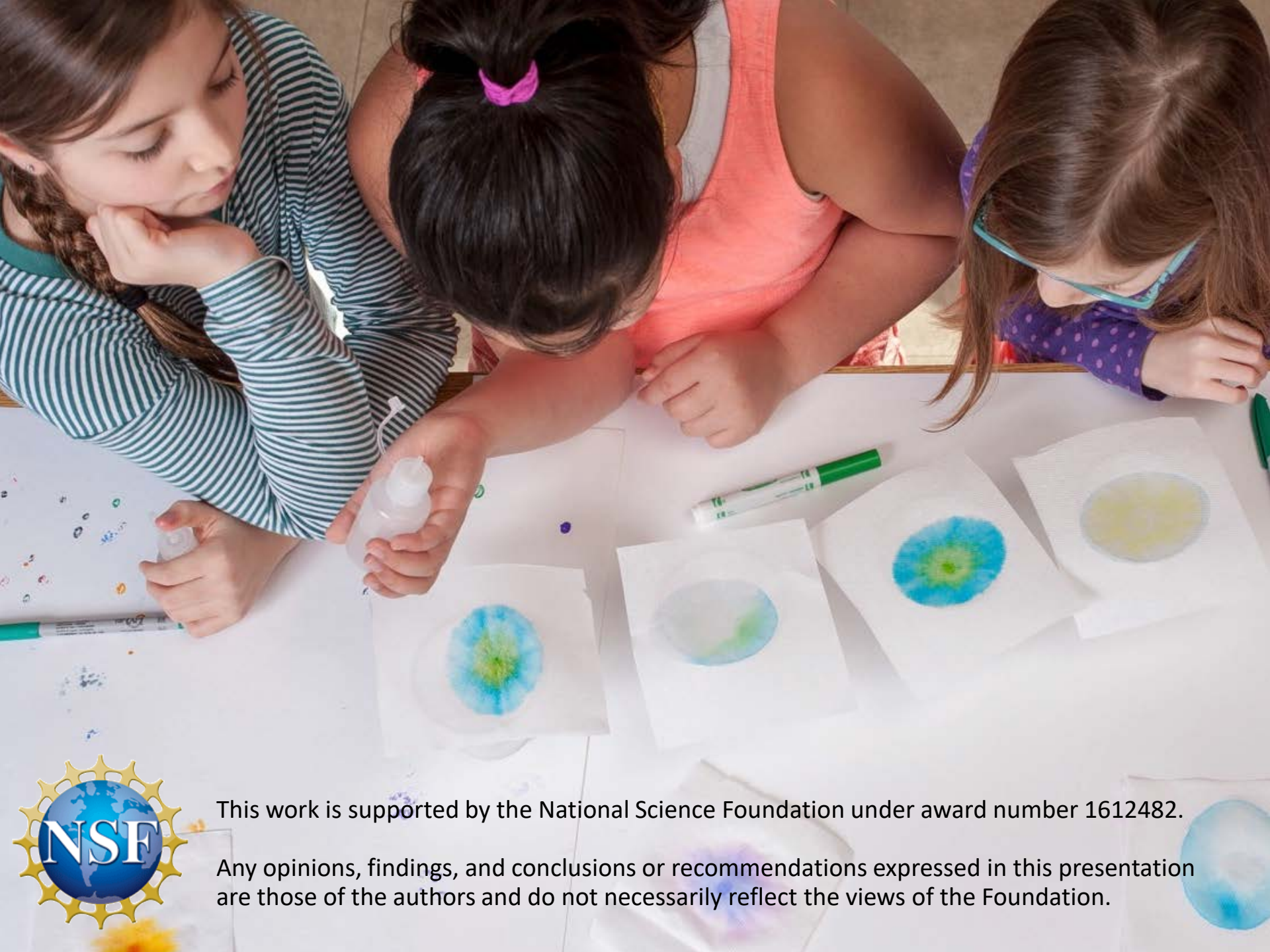
 ACS  
Green Chemistry  
Institute

- **ACS resources** (in the Let's Do Chemistry kit)
- **Flinn Scientific Trainings, Webinars, and courses:**  
<https://www.flinnsci.com/resources/safety-reference/>.
- **National Science Teacher Association resources:** can be found at  
<http://www.nsta.org/safety/>
- **Emergency protocol resources**

**NISE**  
NATIONAL INFORMAL  
STEM EDUCATION  
NETWORK

  
EXPLORE SCIENCE  
**Let's Do Chemistry**





This work is supported by the National Science Foundation under award number 1612482.

Any opinions, findings, and conclusions or recommendations expressed in this presentation are those of the authors and do not necessarily reflect the views of the Foundation.



Thank you!  
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**Questions?**



# Now let's role play...

## Day one planning.



**Cheryl**

**Giant Public Event**

**Phil**

**New Partner**

**Jon**

**Indoor / Outdoor Fall  
Festival**

**David**

**Hands-on Activity  
Chemistry Festival**

# Thank you for attending!

**Cheryl McCallum, EdD - [cdm@cmhouston.org](mailto:cdm@cmhouston.org)**

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Museum of Science, Boston

**Darrell Porcello, PhD - [porcello@gmail.com](mailto:porcello@gmail.com)**

Children's Creativity Museum



# Session Resources

**O Wow! Moments videos with safety examples (Children's Museum of Houston)**

<https://www.cmhouston.org/videos#/Mr.O>

**Let's Do Chemistry Safety Guide (NISE Network/Museum of Science, Boston)**

<http://nisenet.org/catalog/explore-science-lets-do-chemistry-safety-materials>

**ACM portal login for safety planning examples**

<https://portal.childrensmuseums.org/login?ReturnUrl=%2f/>