

Youth Engagement in Climate Solutions and Mental Well-Being



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MGH Center for Environment
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The Medical Society Consortium on
CLIMATE & HEALTH

YOUTH MENTAL HEALTH and the CLIMATE CRISIS

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No disclosures.



TAKE HOME POINTS

1

CLIMATE CHANGE IS ALSO A MENTAL HEALTH EMERGENCY

2

YOUNG PEOPLE ARE AT GREATEST RISK

3

“CLIMATE ANXIETY” IS NOT A FORM OF MENTAL ILLNESS

4

CLIMATE CHANGE, CLIMATE ACTION AND CLIMATE EMOTIONS ARE RELATED



TAKE HOME POINTS

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CLIMATE CHANGE IS ALSO A MENTAL HEALTH EMERGENCY

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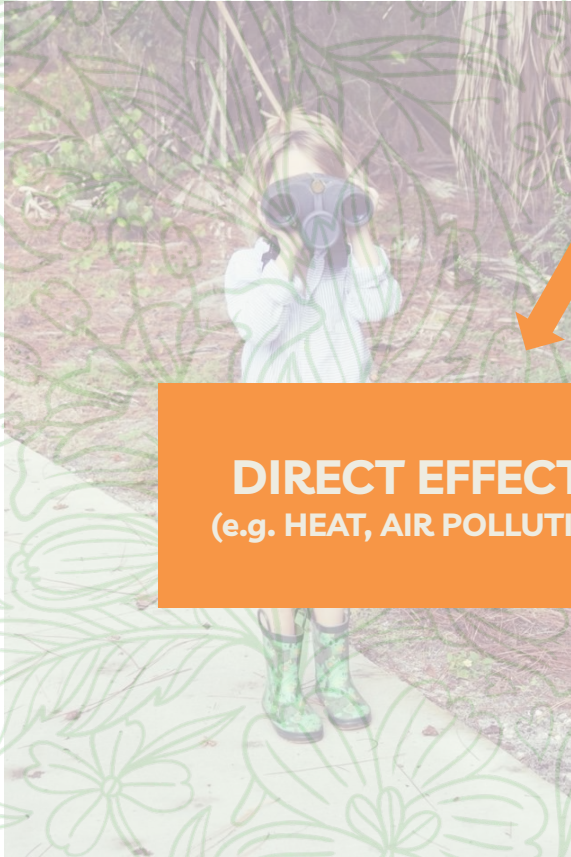
3

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CLIMATE CHANGE, CLIMATE ACTION AND CLIMATE EMOTIONS ARE RELATED

TAKE HOME POINTS



DIRECT EFFECTS
(e.g. HEAT, AIR POLLUTION)

1

CLIMATE CHANGE IS ALSO A
MENTAL HEALTH EMERGENCY

2

YOUNG PEOPLE ARE AT
GREATEST RISK

3

“CLIMATE
FORM

4

CLIMATE
ACTION AND CLIMATE EMOTIONS
ARE RELATED

EFFECTS MEDIATED
THROUGH
CLIMATE-RELATED
TRAUMA

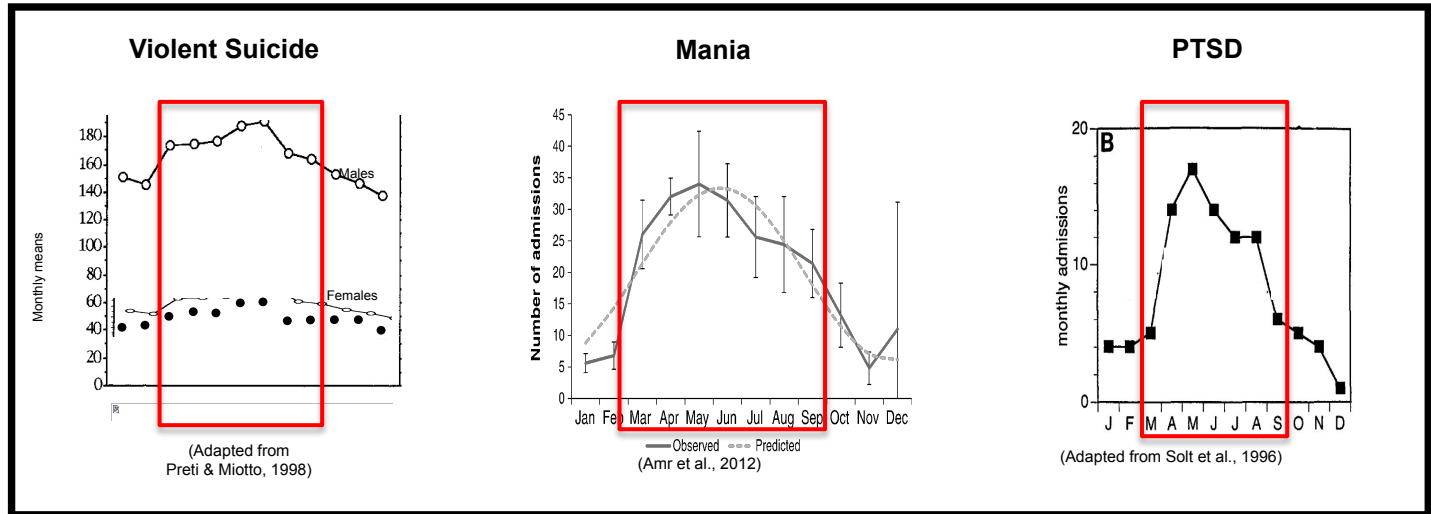
DIRECT EFFECTS on MENTAL HEALTH: HEAT

- Heat impacts sleep, cognition, mood
- Heat reduces learning and academic achievement
- Thermoregulation impaired at baseline in patients with mental illness
- Psychotropic meds further impair thermoregulation



DIRECT EFFECTS on MENTAL HEALTH: HEAT

HIGHER TEMPERATURES CORRELATED WITH SYMPTOM SEVERITY



DIRECT EFFECTS on MENTAL HEALTH: AIR POLLUTION

- Chronic air pollution linked to increased rates of anxiety and depression, lower IQ, dementia
- Episodic poor air quality linked to pediatric crisis presentations



(Brokamp 2019, Szyszkowicz 2020)

CLIMATE-RELATED TRAUMA: EXPOSURES & OUTCOMES



ACUTE EXPOSURE
hurricanes, floods,
wildfires, extreme heat

PTSD

Anxiety and depression

Substance use disorders

Interpersonal violence

Suicide



CHRONIC EXPOSURE
drought, land loss, forced
migration, civil conflict

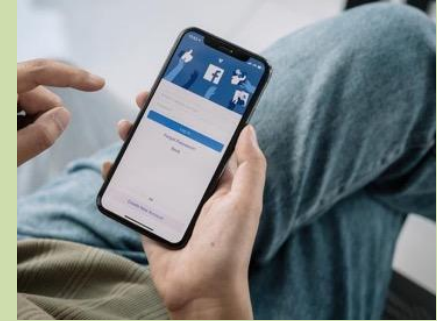
Complex trauma

Existential distress

Grief

Loss of identity

Suicide



VICARIOUS EXPOSURE
climate awareness, news
media, social media

“eco-anxiety”

Fear, dread, despair

“Pre-TSD”

Disaffection, rage

Solastalgia



TAKE HOME POINTS

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VULNERABILITY INHERENT TO YOUNG PEOPLE



IMMATURE PHYSIOLOGY,
DEVELOPMENTAL VULNERABILITY



DEPENDENCE ON SOCIAL SYSTEMS
AND ADULT CAREGIVERS



OUTSIZED IMPACT OF ADVERSE
EVENTS IN CHILDHOOD



TEMPORALITY



PSYCHOLOGICAL VULNERABILITY:
POWERLESSNESS, ADULT BETRAYAL

IMPACTS ARE UNEVEN DUE TO SYSTEMIC INEQUITIES



- Increased exposure to extreme weather events & related trauma
- Higher proximity to amplifying hazards & related trauma
- Lower infrastructure and system resilience, including mental health care system
- Lower air quality, heat islands, decreased access to green space



2021 GLOBAL SURVEY OF CLIMATE ANXIETY IN YOUTH

Hickman et al
2021

68% anxious
58% angry
57% powerless
51% guilty

FEELINGS OF BETRAYAL AND
ABANDONMENT BY GOVERNMENTS
AND ADULTS LINKED WITH GREATER
CLIMATE DISTRESS

- 84%** People have failed
- 77%** The future is frightening
- 58%** Humanity is doomed
- 57%** I won't have same opportunities as my parents
- 57%** My family's security will be threatened
- 43%** Feelings about climate change affect my daily life and functioning
- 41%** I am hesitant to have children

**“I THINK IT’S DIFFERENT FOR
YOUNG PEOPLE. FOR US THE
DESTRUCTION OF THE PLANET
IS PERSONAL.”**

- 16-year-old study participant

Hickman et al

2021



TAKE HOME POINTS

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CLIMATE CHANGE IS A MENTAL HEALTH EMERGENCY, TOO

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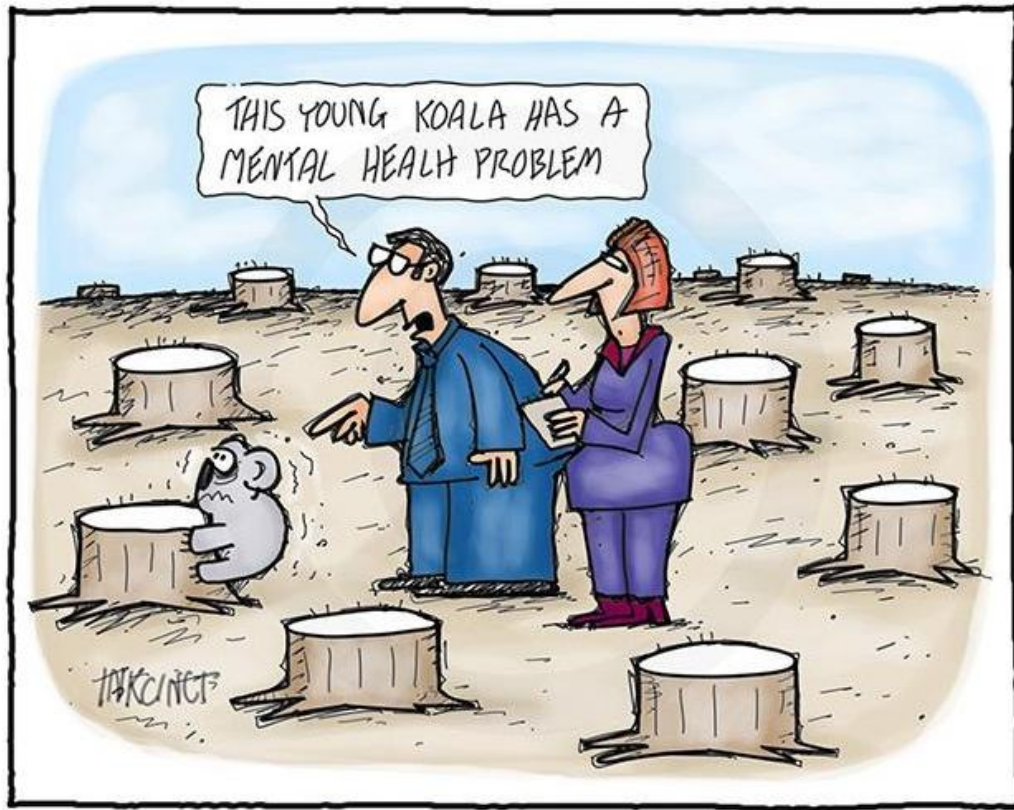
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SUPPORTING YOUTH (and adults) WITH CLIMATE DISTRESS



- “If it’s mentionable, it’s manageable.”
- Be curious, accept strong feelings, avoid minimizing
- Monitor dose and sources of media
- Goal is not eliminating or “treating” anxiety, but enhancing self-efficacy and engagement
- Manage adult anxiety, take adult action
- Encourage **collective** action



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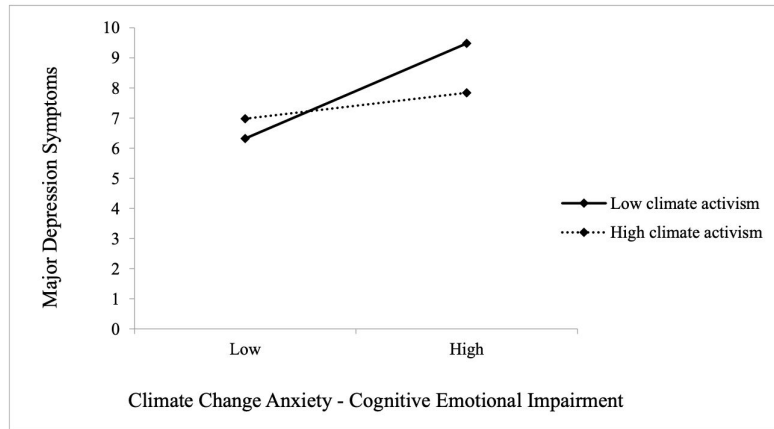
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CLIMATE CHANGE, CLIMATE ACTION AND CLIMATE EMOTIONS ARE RELATED

SCHWARTZ et al 2022

Climate change anxiety and mental health: Environmental activism as buffer

Sarah E. O. Schwartz¹ · Laelia Benoit^{2,3,4} · Susan Clayton⁵ · McKenna F. Parnes¹ · Lance Swenson¹ · Sarah R. Lowe⁶



Collective action (but not individual action) may attenuate association between “climate anxiety” and depressive symptoms



EMOTION-FOCUSED COPING

goal to improve negative feelings associated with a stressor

PROBLEM-FOCUSED COPING

goal to solve the source of stress

(OJALA 2012)



EMOTION-FOCUSED COPING

goal to improve negative feelings
associated with a stressor



Less negative emotions

Less environmentally engaged

PROBLEM-FOCUSED COPING

goal to solve the source of stress



More environmentally engaged

More negative emotions

(OJALA 2012)



EMOTION-FOCUSED COPING

goal to improve negative feelings associated with a stressor



Less negative emotions
Less environmentally engaged

PROBLEM-FOCUSED COPING

goal to solve the source of stress



More environmentally engaged
More negative emotions

MEANING-FOCUSED COPING

drawing on beliefs, values, existential goals



Less negative emotions
More environmentally engaged

(OJALA 2012)



**You don't fight something like that
because you think you will win.**

You fight it because you have to.

**Because surrendering dooms so much
more than yourself, but everything that
comes after you.**

– Mary Annaise Heglar
Climate Change Isn't the First Existential Threat
Medium, 2019





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THANK YOU

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Angela Christofilou/The Independent



RESOURCES

FOR PROVIDERS

- Climate Psychiatry Alliance
- Climate Psychology Alliance North America

FOR PARENTS, CAREGIVERS, HUMANS

- AACAP Resource Center on Climate Change
- Talk Climate: <https://talkclimate.org>
- All We Can Save Project: www.allwecansave.earth
- Parenting in a Changing Climate by Elizabeth Bechard
- Not too Late by Rebecca Solnit and Thelma Young Lutunatabua
- Gen Dread (newsletter) and Generation Dread (book) by Britt Wray

FOR KIDS

- A kid's guide to climate change by NPR Life Kit (twens+)
- All The Feelings Under the Sun by Leslie Davenport (twens)
- Coco's Fire by Jeremy Wortzel and Lena Champlain



SELECTED REFERENCES

Augustinavicius, JL et al. Global climate change and trauma: An International Society for Traumatic Stress Studies Briefing Paper. 2021.

Charlson F et al. Climate Change and Mental Health: A Scoping Review. International Journal of Environmental Research and Public Health. 2021; 18(9):4486.

Clayton S et al. Mental Health and Our Changing Climate Children and Youth Report. APA and ecoAmerica. 2023

EPA. Climate Change and Children's Health and Well-Being in the United States. U.S. Environmental Protection Agency, 2023 EPA 430-R-23-001

Hickman et al. Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. Lancet Planetary Health. Dec 2021



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APHA's Climate and Health Youth Education Toolkit: Engagement through Education

Michelle Loosli, MS

Senior Manager, Center for Climate, Health and Equity, APHA
February 11, 2024





Climate Education in Schools
Why Partner Climate and Health
The Climate and Health Youth Education
Toolkit
Why YOU?

Overview



Climate Education in Schools?



86% of K-12 teachers and
84% of parents of kids under
age 18 believe that climate
change **should** be taught



Most students receive
little to no climate
education in school




Why Climate *and* Health just work



AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.



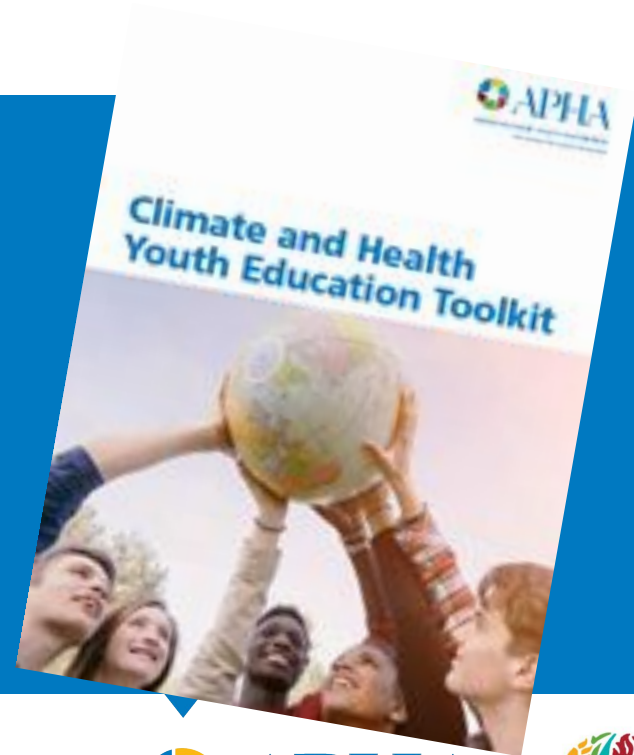
A photograph of a city skyline at sunset, with palm trees in the foreground. The sky is a mix of orange, yellow, and pink, and the city buildings are silhouetted against the bright light. The palm trees are dark against the lighter sky.

Previous research has shown that providing information about the health consequences of climate change can increase climate change issue engagement and support for mitigation policies

Solutions/Adaptations are tangible

Notably, a 2014 survey found that primary care physicians were rated the most trusted source of information about the health effects of climate change, with the CDC as the second most trusted

The Climate and Health Youth Education Toolkit



AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.



#ClimateChangesHealth

Toolkit Content

Table of Contents

- Introduction
- Acknowledgments
- Climate & Health: Lesson Plan for Grades 9–12
 - Summary
 - Background
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 - Procedure
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 - Exploration (20–30 minutes)
 - Elaboration (10–15 minutes)
 - Evaluation (Time Varies)
 - Extend
- Resources
- Chapter-by-Chapter Organizer for Comprehension Answer Key
- Appendix: Tools and Resources
 - Visual model diagram
 - School outreach email template
 - Tips from a high school teacher
 - Public health recruitment flier
 - Youth “Take Action” handout
 - Post-Lecture Survey: Tell us how it went!

Teacher Preparation Checklist

1. Read this entire document once through quickly.
2. Make sure students already have a general concept of climate change and influence climate through greenhouse gas emissions. Please ask the teacher background knowledge, please point students to resources: Causes of Climate Change (NASA).
3. Read the Executive Summary of the 2016 *Climate and Health Assessment* report and decide whether you want to cover all seven categories of health focus on select chapters.
4. Decide whether students will read the 1/2 page chapter summaries, the chapters themselves. Base your decision on their reading level and/or the session, the 1/2 summaries would be best.
5. Assign one group of students for each chapter you have chosen and print for each student. The 1/2 page chapter summaries are included in the sup the other readings will need to be downloaded as PDFs.
 - Chapter 2: Temperature-related Death and Illness (Brochure or Chapter)
 - Chapter 3: Air Quality Impacts (Brochure or Chapter)
 - Chapter 4: Extreme Events (Brochure or Chapter)
 - Chapter 5: Vector-Borne Diseases (Brochure or Chapter)
 - Chapter 6: Water-Related Illness (Brochure or Chapter)
 - Chapter 7: Food Safety, Nutrition, and Distribution (Brochure or Chapter)
 - Chapter 8: Mental Health and Well-Being (Brochure or Chapter)
 - Chapter 9: Populations of Concern (Brochure or Chapter)

Option for low-level readers:










Assign each student either the 1/2 page or the two-page summary for ample time for them to read and for you to review the text as a class and tasked with reading the text, highlighting unfamiliar words and summarizing as a group.

3. Tell them this information helped to construct a **visual model** of this cause and effect model to injury or drowning.
 - a. Point out that flooding can be both an environmental condition and a hazard if high water growth of mold and mildew after water subsides).
 - b. Ask students if they can think of other human health hazards that might arise from flooding.



TEACHING TIP:

To help students distinguish between an environmental condition(s) and hazard, some familiar examples that might arise as a result of a thunderstorm.

Environmental condition		Hazard
	Heavy rain	 Slippery roads  Flooding
	High winds	 Downed trees  Downed electrical wires  Power outages
	Drought	 Wildfire

4. Tell the students that now they are going to work as a class to create a **more complex visual model** of the various health outcomes arising from climate change (as described in the 2016 *Climate and Health Assessment*).

Chapter-by-Chapter Organizer for Comprehension Answer KEY

Chapter 2 | Temperature-related Death and Illness | Extreme Heat

Climate Driver(s)	Exposure Pathway		Health Outcome(s)	Vulnerable Populations
	Environmental Condition	Environmental Hazard		
<ul style="list-style-type: none"> • increasing air temperature • more frequent elevated air temperature • prolonged heat waves • seasonal timing of events 	<ul style="list-style-type: none"> • elevated air temperatures • combined impact of temperature, humidity, wind & sunlight 	<ul style="list-style-type: none"> • prolonged exposure to extreme heat 	<ul style="list-style-type: none"> • heat-related illness and death, including heat cramps, heat exhaustion, heatstroke and hyperthermia; dehydration; exacerbation of respiratory, cardiac, and other illnesses associated with extreme heat, hospital and emergency department visits • potential decrease in cold-related deaths, including hypothermia and frostbite 	<ul style="list-style-type: none"> • children and the elderly, economically disadvantaged groups, chronically ill, outdoor workers and athletes



POSSIBLE ADAPTATION STRATEGIES TO ADDRESS EXTREME HEAT

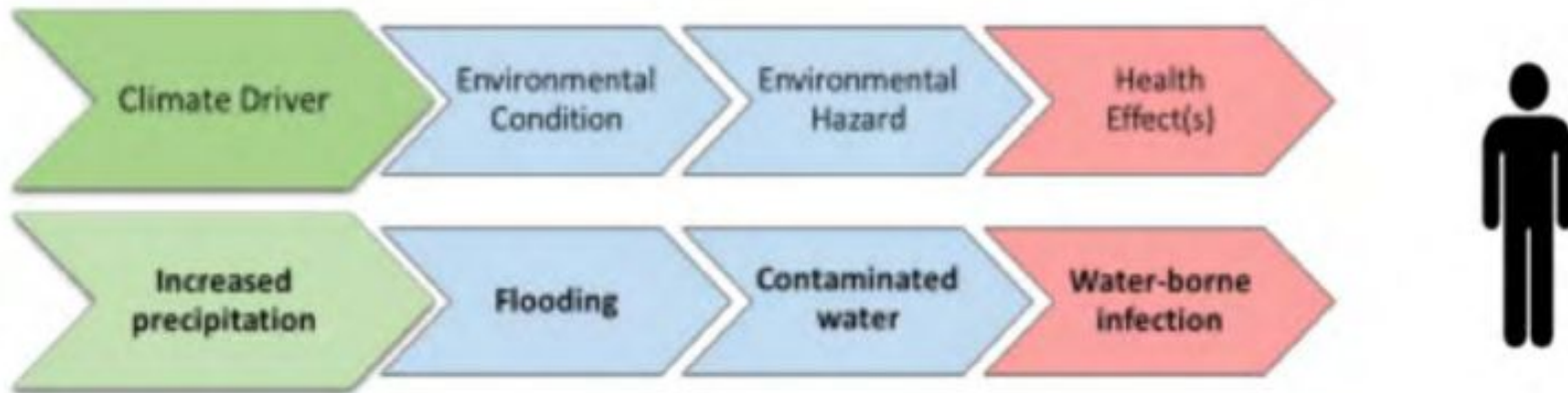


PERSONAL: stay hydrated, be aware of heat advisories and adjust work/play time outdoors, etc. Students may be prompted to identify adaptive behaviors for athletes who participate in school sports during high temperature events.

SOCIETAL: issue heat advisories, offer cooling centers or water play features at parks, adjust shifts of outdoor workers or time of outdoor practices to avoid the hottest part of the day, construct green roofs, cool roofs, plant street trees, train emergency personnel for heat-related illness, etc. Regarding school sports, students could be prompted to identify actions the athletic departments/school administration can take to protect athletes who participate in school sports during high-temperature events.

Understanding the Exposure Pathway Diagrams

Visual Model | Cause and Effect Flooding & Human Health



Center for Climate, Health and Equity

Interactive lesson elements

Activity Description:

- **Objective:** Create a comprehensive systems map using popsicle sticks and chalk lines.

Benefits:

- **Interactive Learning:** Encourages active participation and hands-on understanding.
- **Teamwork:** Fosters collaboration and communication among team members.
- **Visual Representation:** Helps create a clear visual representation of climate, exposure, and its connection to health.

Climate to Health Relay Race

This relay race activity promotes collaboration, problem-solving, and knowledge sharing in a fun and interactive way!

OBJECTIVES

Students will (1) describe the impacts of a changing climate on human health and (2) apply systems thinking to create a visual model of health implications.

INTRODUCTION

This activity is meant to supplement the [Climate and Youth Education Toolkit](#). Check out APHA's [Children's Environmental Health Committee](#) to learn how this lesson plan was developed and to access additional supporting materials! Note that this activity can be done in any open space, indoors and out! For a quick summary of the causes and effects of climate change check out <https://www.un.org/en/climatechange/science/causes-effects-climate-change>.

BACKGROUND

Climate change, driven by rising greenhouse gas (a climate driver) concentrations, results in higher temperatures, altered precipitation, extreme weather events, and rising sea levels. These changes lead to harmful conditions which impact food security, water quality, air quality, and our natural surroundings, posing risks to human health.



As the climate continues to change, the complexity of its effects on health increases - one environmental condition can lead to multiple hazards (exposures) that may lead to various health outcomes, while multiple climate drivers can interact to create different environmental conditions (See Sample Model).

This handout was developed by the APHA Environment Section's [Children's Environmental Health Committee](#)



AT A GLANCE

Grade Level

9th - 12th Grade (but it can be adapted!)

Goal

Relay to make as many connections between climate exposures and health outcomes.

Suggested Materials

Popsicle sticks; Sidewalk chalk

Activity Time

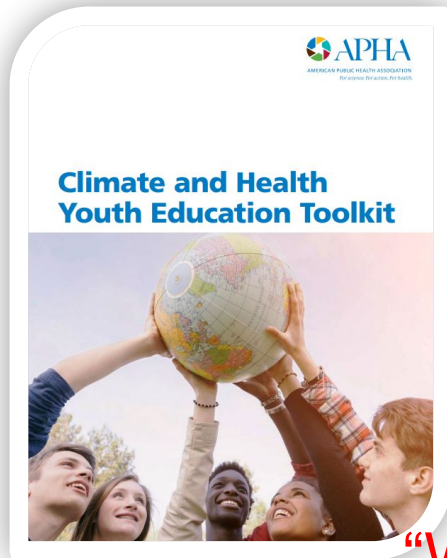
Minimum 30 minutes

! SAFETY ALERT

- Check the play area for potential physical risks, including poisonous plants, insect hives, or tripping hazards.
- Consider weather conditions - including outdoor air quality and temperature. Check aqrnow.gov for your current forecast.
- Play in shaded areas if possible.
- Drink plenty of water.
- Wear sun protection!

Center for Climate, Health and Equity

Climate and Health Youth Education Toolkit



“On a scale of one to ten I will rate the program nine, the program has effectively impacted the knowledge of the students regarding climate change and health . I have also had several students saying that they enjoyed it and learned something new about the environment that they didn't already know about. I think the facilitators did a nice job with it!”

“The lesson plan is detailed and concise to help students understand the relationship between climate and health and mitigation and adaptation strategies to help them stay resilient.”

“The activities we had time to do went really well! The students had impressive responses for the prior knowledge activity and expanded health impacts to community health and community-wide impacts.”

“Wonderful Toolkit!”

More resources



What Is
Public Health

Topics &
Issues

Policy &
Advocacy

Publications &
Periodicals

Professional
Development

Events &
Meetings

News &
Media

APHA
Communities

APHA
Membership

APHA > [Topics & Issues](#) > [Climate, Health and Equity](#) > [Climate and Health Education](#)



Climate and Health Youth Education Toolkit

This new toolkit is designed to aid public health professionals in giving guest lectures on climate, health and equity at local high schools, summer camps or anywhere that students in grades 9-12 learn.



[Download the toolkit \(PDF\).](#)

[Download a PowerPoint slide deck](#) to help guide your presentation.

Watch webinar recordings:

- [Engaging Youth in Climate and Health Solutions: Using APHA's Climate and Health Youth Education Toolkit](#)
- [Climate Justice and Children's Health: Inspiring Youth to Advocate for Climate Action](#)

Read: [APHA toolkit can help high schoolers make connection on climate and health](#) (Public Health Newswire)

Check out APHA's [Children's Environmental Health Committee](#) to learn how this lesson plan was developed and to access supporting materials.

[Topics & Issues](#)

[Climate, Health and Equity](#)

[#ActOnClimate](#)

[Center for Climate, Health and Equity](#)

[Justice, Equity, Diversity and Inclusion](#)

[Climate Storytelling](#)

[Equity Guide](#)

[Climate and Health Education](#)

[ECO Bookworms](#)

URL:

[APHA.org/Climate-Ed](https://www.apha.org/Climate-Ed)

CEH Website Resources

Climate and Health Lesson Plan Resources



Recruitment Tools



Lesson Plan Resources



After You Teach



Additional Resources

Everything you need to successfully implement the Climate and Health Lesson Plan for high school students.

- Customizable [Email template](#) for you to initiate contact with a local high school. Don't have time to implement this lesson yourself but still want to be involved? Here are links to help us spread the word.
- [Recruitment Flyer](#) If you know someone or an organization that might be interested in implementing this lesson plan, share this flyer with them and help us spread the word about Teaching Climate and Health!
- [Social Media Recruitment Folder](#) Prefer to share on social media? Posts and captions are available for various social platforms, including Facebook, Instagram, and Twitter.

- The [Climate and Health Lesson Plan](#), in [APHA's Climate and Health Youth Education Toolkit](#), is 100 minutes, developed by a subgroup within the APHA Environment Section and adapted from [NIEHS Climate Lesson Plans](#) to connect climate to health.
- This [one-pager](#) contains all the resources hyperlinked in the lesson plan in an easy-to-find document.

- [Youth Take Action Handout](#) Share this one-pager with students after you have finished the lesson plan! This handout contains resources to help students get involved in the climate movement, from projects they can do at school to involvement on a grander scale.
- Ask the school for permission to post on social media tag @APHAEnvironment and use #ClimateChangesHealth
- Complete the quick survey (<https://bit.ly/3tprHdo>)

- [Tips from a High School Teacher](#) To make the most impact, we got advice from a current high school teacher to help us prepare for the classroom.
- Even if you can't implement the lesson plan yourself, if you contact a school or teacher who would like to know more about taking climate action, give them this [Schools for Climate Action Replication Guide](#); ecoAmerica developed this guide for passing along to teachers or students interested in committing their school district to local climate goals.

Why YOU?





As the most trusted source of information on climate change and health, health professionals are well positioned to deliver these messages to the public.

—Lancet, November 2023

Why engage the community

- Take your passion to the community
- Build trust between school and public health system
- Strengthen children and build resilience
- And...



JOIN
US

 **WORLD WIDE
CLIMATE JUSTICE
EDUCATION WEEK**
SOLVECLIMATE BY 2030

April 1 - 8

apha.org/climate-ed
#NPHW
#makeclimateaclass
#climatechangeshealth





FEB 29 – MAR 1

The Center for Climate Health and Equity is hosting a two-day virtual event bringing together APHA members and partners from across sections and disciplines to explore the intersectionality of climate, health and equity, build community, and advance collaborative work in the pursuit of a healthier, more equitable future.

apha.org/climate

Michelle Loosli

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@americanpublichealth

X @EH_4_ALL

