

## Notice of Public Meeting

Wednesday, March 8, 2023

10:30 a.m. – 3:25 p.m.

Hybrid Meeting

ASL and Spanish interpretation available  
Physical meeting at Labor & Industries Auditorium,  
7273 Linderson Way SW, Tumwater, WA 98501  
Virtual meeting via ZOOM Webinar  
(hyperlink provided below)

### Final Agenda

Time	Agenda Item	Speaker
10:30 a.m.	Call to Order & Introductions	Keith Grellner, Board Chair
10:35 a.m.	1. Approval of Agenda—Possible Action	Keith Grellner, Board Chair
10:40 a.m.	2. Approval of January 9, 2023, Minutes – Possible Action	Keith Grellner, Board Chair
10:45 a.m.	3. Public Comment (Note: Public Testimony on Item 7, Rules Hearing for Handling of Human Remains, Natural Organic Reduction, Chapter 246-500-055 WAC, will begin at 1:30 p.m.)	Please note: Verbal public comment may be limited so that the Board can consider all agenda items. The Chair may limit each speaker's time based on the number people signed up to comment.
11:15 a.m.	4. Announcements and Board Business	Michelle Davis, Board Executive Director
11:35 a.m.	5. Department of Health Update	Tao Sheng Kwan-Gett, Secretary's Designee, Chief Science Officer
12:05 p.m.	6. Briefing – School Environmental Health & Safety, Findings from the University of Washington Report	Stuart Glasoe, Board Staff Juan Gamez Briceno, Department of Health
12:35 p.m.	Lunch	
1:30 p.m.	7. Rules Hearing – <a href="#">Handling of Human Remains, Natural Organic Reduction, Chapter 246-500-055 WAC</a> – Testimony Will Be Taken – Possible Action	Patty Hayes, Board Member Molly Dinardo, Board Staff
1:50 p.m.	8. Briefing – Newborn Screening, Mucopolysaccharidosis (MPS II) Qualifying Assumption Analysis Findings, – Possible Action	Kelly Oshiro, Board Member Molly Dinardo, Board Staff John Thompson, Department of Health

Time	Agenda Item	Speaker
2:05 p.m.	9. Petition – Newborn Screening, Request to add Guanidinoacetate methyltransferase (GAMT) deficiency to <a href="#">chapter 246-650 WAC</a> , – Possible Action	Kelly Oshiro, Board Member Molly Dinardo, Board Staff John Thompson, Department of Health
2:35 p.m.	10. Update – Child Immunization Rates in Washington State	Tao Sheng Kwan-Gett, Secretary's Designee Molly Dinardo, Board Staff Jamilia Sherls-Jones, Department of Health Katherine Graff, Department of Health
3:05 p.m.	11. Board Member Comments	
3:25 p.m.	Adjournment	

- **To access the meeting online and to register:**  
[https://us02web.zoom.us/webinar/register/WN\\_has7tGYeQ9uKBC9EUwsD9g](https://us02web.zoom.us/webinar/register/WN_has7tGYeQ9uKBC9EUwsD9g)
- **You can also dial-in using your phone for listen-only mode:**  
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#### **Important Meeting Information to Know:**

- Times are estimates only. We reserve the right to alter the order of the agenda.
- If you would like meeting materials in an alternate format or a different language, or if you are a person living with a disability and need [reasonable modification](#) (in English), please contact the State Board of Health at (360) 236-4110 or by email [wsboh@sboh.wa.gov](mailto:wsboh@sboh.wa.gov). Please make your request as soon as possible to help us meet your needs. Some requests may take longer than two weeks to fulfill. TTY users can dial 711.

#### **Information About Giving Verbal Public Comment at Hybrid Meetings:**

- For the public attending in-person: If you would like to provide public comment, please write your name on the sign-in sheet before the public comment period begins. We strongly encourage people to sign up with the Board by sending an email by 12:00 Noon the day before the meeting to: [wsboh@sboh.wa.gov](mailto:wsboh@sboh.wa.gov). As this is a business meeting of the Board, time available for public comment is limited (typically 2 to 4 minutes per person). The Chair will call on those who have signed up to speak to the Board, first. The amount of time allotted to each person will depend on the number of speakers present. If time remains, those who have not signed up ahead of time to speak to the Board will be called on to speak until the scheduled time for Public Comment comes to an end.
- For the public attending virtually: If you would like to provide public comment, please sign up through the Zoom webinar link by 12:00 Noon the day before the meeting. Your name will be called when it's your turn to comment.

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- To provide verbal public testimony for Rules Hearings, please use this same process.

**Information About Giving Written Public Comment:**

- Please visit the Board's [March 8 Meeting Materials webpage](#) (in English) for details on how to provide written public comment.

# WASHINGTON STATE BOARD OF HEALTH

## Draft Minutes of the State Board of Health

January 9, 2023

Electronic meeting via ZOOM Webinar

### State Board of Health members present:

Keith Grellner, RS, Chair

Kelly Oshiro, JD, Vice Chair

Elisabeth Crawford

Patty Hayes, RN MN

Socia Love-Thurman, MD

Scott Lindquist, MD, MPH, State Medical Epidemiologist for Communicable Disease,  
Secretary's Designee

Dimyana Abdelmalek, MD, MPH

Umair A. Shah, MD, MPH

Stephen Kutz, BSN, MPH

Melinda Flores

### State Board of Health members absent:

### State Board of Health staff present:

Michelle Davis, Executive Director

Melanie Hisaw, Executive Assistant

Kelie Kahler, Communication Manager

Stuart Glasoe, Health Policy Advisor

Kaitlyn Campbell, Health Policy Advisor

Molly Dinardo, Health Policy Advisor

LinhPhung Huynh, Department of Health

Lindsay Herendeen, Health Policy Analyst

Cait Lang-Perez, Health Policy Analyst

Miranda Calmjoy, Health Policy Analyst

Jo-Ann Huynh, Administrative Assistant

Hannah Haag, Community Outreach  
Coordinator

Grace Cohen, Department of Health

Lilia Lopez, Assistant Attorney General

### Guests and other participants:

Alexandra Montaño, Director, Policy and  
Legislative Relations, Disease Control  
and Health Statistics

Jeremy Simmons, Department of Health

Keith Grellner, Board Chair, called the public meeting to order at 9:32 a.m. and read from a prepared statement (on file). He then detailed operating procedure and ground rules for conducting a virtual meeting, and asked board members to introduce themselves.

## 1. APPROVAL OF AGENDA

**Motion:** Approve January 9, 2023 agenda

**Motion/Second:** Member Hayes/Vice Chair Oshiro. Approved unanimously



## **2. ADOPTION OF NOVEMBER 9, 2022 MEETING MINUTES**

**Motion:** Approve the November 9, 2022 minutes.

**Motion/Second:** Vice Chair Oshiro/Member Crawford. Approved unanimously

## **3. BOARD ANNOUNCEMENTS AND OTHER BUSINESS**

Michelle Davis, Board Executive Director greeted the Board and directed Board members to materials in their packets. Ms. Davis said that Cait Lang-Perez, health impact review analyst for the Board would be on parental leave during legislative session. She announced that Kaitlyn Campbell, policy advisor to the Board, would be taking a senior policy advisor position at the Health Benefits Exchange. She said Ms. Campbell served as Board staff since May 2020, and described her many contributions to the Board. Ms. Davis asked the Board to join her in thanking Kaitlyn for her contributions to the Board's work over the last two years and wished her the best in her future endeavors.

Ms. Davis provide an update on health impact reviews, and said the HIR Team recently completed a Health Impact Review of SB 5002, Concerning alcohol concentration. She said the team is currently working on a Review of HB 1169, Concerning legal financial obligations, and noted the bill was similar provisions to 3SHB 1412 from the 2022 legislative session, on which a Health Impact Review was completed.

Ms. Davis reported that the HIR team is continuing its outreach to legislative members, and has been invited to present in a House Republican Caucus Meeting on Thursday, January 19. She said the team continues to monitor legislative bill introductions including bills related to previous Health Impact Review topics.

Ms. Davis described the meeting materials including meeting notes from December policy committee meetings, the CR-103 emergency rule for covid reporting, and the rescission of the emergency rules. She said rescission was needed because the updated Notifiable Conditions chapter went into effect on January 1, 2023.

Ms. Davis directed the Board to see three letters from the Department of Health to laboratory directors, clinicians, and state agency and local public health partners. She said the letters request provisional reporting of COVID-19, MPOX and carbapenemase producing organisms. She reminded the Board that it has granted the state health officer the authority to request additional data components to be submitted with reports and specimen submittal of notifiable conditions under WAC 246-101-015.

Ms. Davis noted the 2023 legislative session had just started and referred to the legislative statement that the Board will review later on the agenda. She said she would provide regular updates to the Board during legislative session.

Stephen Kutz, Board Member, took opportunity to thank Kaitlyn Campbell for all her work, and wishes her all the best.

## **4. DEPARTMENT OF HEALTH UPDATE**

Umair A. Shah, Secretary of Health and Board Member, shared the department's update (see materials on file, Tab4A).

Scott Lindquist, State Epidemiologist for Communicable Diseases and Member Shah presented on the Department of Health's (DOH) 2023 goals and priorities. As part of the Transformation Health/Transactional Health plan, DOH has identified 5 priority areas: Health and Wellness, health systems and workforce transformation, environmental health, emergency response and resilience, global and one health.

Dr. Lindquist provided a Respiratory Virus Update. While Washington State is still considered high activity for RSV in the U.S., DOH is seeing a decrease in positive cases, people presenting for testing, and in hospitalizations, with no indications of another peak. He provided a summary of DOH's syndromic surveillance system, which collects data by electronically tracking online medical entries. He also presented an update on the COVID-19 virus. Washington is seeing an emergence of new variants of COVID-19 that are more infectious but not more deadly. He also reviewed the changes DOH is making for notifiable conditions modernization, updating: update data systems/applications, reporting forms and guidelines updates, communications, and training.

Board Member Kutz asked if DOH is seeing signs of "immunization fatigue" and if that was related to the high rates of RSV. Member Shah responded that there is some concern regarding immunization fatigue, and that media coverage of the COVID vaccine has made some parent concerned about all childhood vaccines.

Patty Hayes, Board Member asked if there's a timeline of if, and when, the mask mandate on healthcare facilities will be lifted and) what language is appropriate to discuss COVID-19 and if it could be described as "endemic". Member Shah responded to the first question that it would be unlikely that the mask mandate in healthcare facilities will be lifted. DOH is tracking COVID rates weekly to see when it will be appropriate to lift. He also stated they are taking into consideration the broad definition of healthcare facilities in Washington and if the mandate can and should be limited to inpatient facilities. Dr. Lindquist responded to the second question, stating that COVID could eventually be labelled as "endemic", but that will require stabilization of rates as well as a decrease in the continuous emergence of new variants.

## **5. PUBLIC COMMENT**

Bill Osmunson, DDS, MPH, spoke in opposition to water fluoridation, and talked about neurotoxic and cognitive development hazards of fluoridation to humans. Dr. Osmunson said he treats dental fluorosis; chipped, cracked, and broken teeth. Dr. Osmunson stated the cost of water fluoridation is 30x higher than the savings and that fluoride should be treated as a drug.

Alicia Flegel, mother of 3 in King County, WA, spoke in opposition to the COVID-19 vaccine for school entry for children, stating that children are not in the category for risk, and that children have good immune systems.

Natalie Chavez spoke in opposition to the Human Papillomavirus Vaccine (HPV) and talked about studies and dangers of the HPV vaccine to children. Natalie Chavez said she was shocked to hear at the recent Vaccine Advisory Committee (VAC) meeting of

the discussion to lower the age to 9 years in WA state for the HPV vaccine and for annual reminders given to health care providers.

Grace Yuan, legal counsel for Puget Sound School Coalition, respectfully asked the board to not act on item 8, Rulemaking Petition to revise the Environmental Health and Safety Standards for Primary and Secondary Schools. Grace Yuan said we are all using the same standards in testing water, 5 ppb (parts per billion), and that rulemaking is not necessary at this time.

Susan Prosser stated their concern regarding COVID-19 vaccine mandatory requirements for children.

Lara Gabriel, a mother, and nurse stated their opposition to the COVID-19 vaccine and spoke about the harmful effects of myocarditis. Lara Gabriel said myocarditis cases have increased at least 5% in those vaccinated, and proposed the risk for myocarditis be provided with vaccine administration. Laura Gabriel talked about the decrease for COVID-19 vaccine recommendations in healthy children in other countries, specifically Sweden, UK and Denmark.

Chair Grellner closed public comment at 10:52 a.m.

## **6. EMERGENCY RULEMAKING – ON-SITE SEWAGE SYSTEMS, WAC 246-272A-0110, PROPRIETARY TREATMENT PRODUCTS AND SUPPLY CHAIN SHORTAGES – POSSIBLE ACTION**

Chair Grellner introduced the Department of Health's request for the third emergency rule for on-site sewage system proprietary treatment products.

Stuart Glasoe, Board Staff, discussed the Board's statutory authority to regulate on-site sewage systems. He explained the Department's request that the Board adopt a third emergency rule to allow retrofits and maintenance of proprietary treatment products with comparable components during supply chain disruptions. He explained that the Board previously adopted this emergency rule in June 2022 and October 2022.

Jeremy Simmons, Department of Health summarized the need for the emergency rule and implementation to date. He explained that there was a shortage of ultraviolet (UV) bulbs used in sewage treatment systems, caused by the shuttering of the manufacturer Salcor in April 2022, as well as other supply chain disruptions associated with the COVID-19 pandemic. Mr. Simmons said that use of the substitute bulbs has been successful and allowed thousands of septic systems across the state to continue functioning. He said that the Department is requesting adoption of a third emergency rule as the current rule is set to expire early next month. Mr. Simmons also shared that the Department is working on a permanent rule that would allow for the use of substitute parts in case of certified supply chain issues.

Elisabeth Crawford, Board Member, asked Mr. Simmons to elaborate further on potential long-term solutions to this issue. Mr. Simmons replied that with regards to the proprietary Salcor bulbs, the company has been purchased and production will start pending a National Science Foundation (NSF) recertification process, which takes around 6 months to complete. He also spoke about mechanisms within the draft

permanent rule that would allow manufacturers to use substitute parts in the event of supply chain shortages. Member Crawford then asked if there might need to be another emergency rule after this one. Mr. Simmons replied that this is likely. Mr. Glasoe elaborated that this emergency rule will be filed about February 10, 2023, and last 120 days. Mr. Glasoe said that there may need to be another emergency rule depending on the timeline for the permanent rule adoption.

Member Crawford asked about the Department's process for staying current with newly approved parts by the NSF. Mr. Simmons replied that the Department does not monitor manufacturers and described the manufacturer's process for registering products with the Department. Member Crawford then asked how similar issues might be prevented in the future, given that this process is manufacturer-driven. Mr. Simmons replied that there is not currently a great mechanism for preventing manufacturer-related supply issues. He clarified that once a shortage is identified, the approval process for substitute parts takes one to two weeks.

Melinda Flores, Board Member, asked how often certification is required for these products. Mr. Simmons replied that while NSF requires manufacturers to recertify products, the Department does not. He said that the manufacturer only needs to maintain their registration administratively for their products to remain registered, given there is no contrary feedback from industry or local health jurisdictions. He said that there is a proposal in the draft permanent rule for products to be field tested after NSF testing.

Kelly Oshiro, Board Vice Chair, asked about Salcor's market share and the extent of the disruption that their shuttering caused. Mr. Simmons replied that Salcor had about 65 percent market share, with tens of thousands of their proprietary UV bulbs being used across the state. He said that the shuttering was very disruptive and had impacts on the real estate market.

Member Kutz shared his support for continuing the emergency rule. He then asked what the Department has done historically when manufacturers of proprietary products have gone out of business. Mr. Simmons replied that there has not been a good solution at the regulatory level. He said that when manufacturers have shuttered historically, there was a sufficient supply of other products that consumers could purchase. He said he hopes the permanent rule can move the Department closer to a solution.

Chair Grellner asked whether there is currently sufficient supply of the two products approved to be used as substitutes for the Salcor bulbs. Mr. Simmons replied that there is, and that the Department has received another application for a substitute part. Mr. Simmons said that with Salcor's repurchasing and expected production restart, there should no longer be supply issues for treatment UV bulbs.

**Motion:** The Board directs staff to file a third CR-103E, Emergency Rulemaking Order, upon expiration of the second emergency rule, filed as WSR 22-21-070, to amend WAC 246-272A-0110 to help ensure on-site sewage system proprietary treatment products continue to function properly without negatively impacting treatment, operation, or maintenance during supply chain shortages or other manufacturing disruptions.

**Motion/Second:** [Member Kutz/Member Lindquist](#). Approved unanimously.

**7. UPDATE – ON-SITE SEWAGE SYSTEMS, CHAPTER 246-272A WAC**

Keith Grellner, Board Chair, introduced the update, briefly explaining board authority for on-site sewage systems and introducing the informational presentation on the on-site sewage rulemaking. Jeremy Simmons, Department of Health, presented background on on-site sewage systems, the rules and rulemaking process, highlights of key issues and revisions in the draft rules, and anticipated next steps in the rulemaking project (presentation on file).

Board members had no questions on the presentation and rulemaking project.

The Board recessed for lunch at 12:25 p.m. and reconvened at 1:00 p.m.

**8. RULEMAKING PETITION – THE BOARD HAS RECEIVED A PETITION TO REVISE ENVIRONMENTAL HEALTH AND SAFETY STANDARDS FOR PRIMARY AND SECONDARY SCHOOLS, CHAPTER 246-366A WAC – POSSIBLE ACTION**

Keith Grellner, Board Chair invited Kaitlyn Campbell, Board Staff to present on the petition to revise Chapter 246-366A WAC.

Kaitlyn Campbell, Board Staff reviewed the petition for rulemaking from Representative Pollet to revise certain sections of Chapter 246-355A WAC and provided context regarding the rules, which have been suspended since 2009 due to a budget proviso. In the 2021 legislative session, the Legislature passed Engrossed Second Substitute House Bill 1139, which requires primary and secondary schools to regularly sample, test, and remediate lead in drinking water that have built (or plumbing was replaced) prior to 2016. The 2021 law incorporates more stringent and protective standard and is more prescriptive than Board's suspended rules. She went on to explain that the petition argues that the legislature has fully funded implementation of the new lead standards, meeting the budget proviso; however, it is unclear whether the funding will be sufficient to fulfill the new statutory requirements. She also let the Board know that given the rules are currently not in effect, there is no conflict between the suspended rules and the law.

Chair Grellner invited board members to discuss the petition.

Member Kutz asked how many areas within a school would need to be tested and whether the predominant source of lead would be drinking fountains. Juan Gamez and Theresa Sanders (Office of Environmental Health and Safety) stated that many fixtures had not been replaced yet. They provided context that buildings built after or had fixture replacement after 2016 would not be tested. They also explained the testing process, to confirm it's the fixture that has lead, not the water source itself.

Member Hayes and Member Flores asked if the governor's proposed budget supports a maintenance budget of 2.8 million and how the budget will be distributed amongst schools. Ms. Campbell confirmed initial 2022-2023 DOH provided funds initially for testing and then separate grant for fixture replacement and maintenance needs. Future funding is unclear but there is a proposed capital budget for additional funds for OSPI.

Member Hayes and Member Flores were interested in the intent behind the petition. Ms. Campbell stated the understanding was the petitioner would like the Board's rules to mirror the law. They also discussed whether the budget proviso had been met.

Chair Grellner asked for a motion before continuing the conversation.

Member Kutz motioned to accept the petition; Member Hayes seconded.

Board Vice Chair Oshiro asked if there are any risks to accepting or denying the petition. Lilia Lopez, Assistant Attorney General stated that she did not see legal risk voting either way.

Member Kutz asked if by opening the school rules to only address lead in the drinking water, would the Board be going against the legislature. Chair Grellner shared that he believed accepting the petition would be in violation of the budget proviso.

Dimyana Abdelmalek, Board Member asked what it would look like to meet the budget proviso. Chair Grellner and Ms. Campbell provided context regarding the role of the legislature and the budget proviso.

Member Kutz withdrew his initial motion and made a new motion.

**Motion:** The Board declines the petition for rulemaking to revise applicable sections of chapter 246-366A WAC to reflect testing, remediation, and notification requirements for lead in school drinking water under RCW 28A.210.410 for the reasons articulated by Board members. The Board directs staff to notify the petitioner of the Board's decision.

**Motion/Second:** Member Kutz/Member Hayes. Approved unanimously.

## **9. 2023 LEGISLATIVE STATEMENT – POSSIBLE ACTION**

Michelle Davis, Board Executive Director, reviewed the SBOH's legislative session procedures and reviewed the changes made to the Statement of Policy (statement on file).

Member Hayes thanked other board members for their comments and staff for the updates to the document to make it more organized and readable.

**Motion:** The Board adopts the Statement of Policy on Possible 2023-24 Legislative Issues as discussed on January 9, 2023.

**Motion/Second:** Member Hayes/Member Flores. Approved unanimously

## **10. BRIEFING – ABBREVIATED RULEMAKING FOR HUMAN REMAINS REDUCED THROUGH NATURAL ORGANIC REDUCTION, CHAPTER 246-500-055 WAC**

Member Hayes introduced the Board's Human Remains Rule.

Molly Dinardo, Board staff, described Chapter 246-500 WAC, which establishes standards for health and safety measures in the handling of human remains. Molly shared that in 2019, the legislature passed Engrossed Second Substitute Senate Bill (ESSB) 5001, concerning human remains. The law authorized two new methods of disposition – alkaline hydrolysis and natural organic reduction (NOR).

The law became effective May 1, 2020. Department of Licensing (DOL) conducted rulemaking to incorporate new disposition methods, which became effective in June 2020. Shortly after the DOL did its rulemaking, the Board initiated its own rulemaking to update chapter 246-500 WAC to include NOR and alkaline hydrolysis as new disposition methods and added two new sections of the rule relating to each disposition method. These new rules went into effect in January 2021.

The Board's rule implementation plan recognizes the Department of Licensing Funeral and Cemetery Board's oversight of facilities and licensees that handle the disposition of human remains. Board staff provide technical assistance and support regarding implementation of the Board's rules. As part of implementation follow-up, Board staff created and administered a post-rulemaking survey for NOR facilities to determine whether rule implementation was successful or if clarification was needed.

Ms. Dinardo presented an overview of the survey and findings from the four NOR facilities surveyed. Based on findings from the post-implementation survey, staff identified a need for rulemaking to clarify rule language in WAC 246-500-055. Specifically, Table 500-A includes a typo that needs to be corrected. Molly provided additional background on this section of the Board's rule, detailed staff's proposal to initiate exception rulemaking, and explained that this rule qualifies for exception rulemaking under RCW 34.05.310(4)(d). Molly also mentioned that if Board Members approve this proposal, staff would file a CR-102 by February 1<sup>st</sup>, and a rules hearing would be held during the Board's March 8<sup>th</sup> meeting.

**Motion:** The Board approves the rulemaking proposal and directs Board staff to move forward with exception rulemaking under RCW 34.05.310(4)(d) to correct typographical errors and to clarify the testing parameters language in WAC 246-500-055 and submit the CR-102 to initiate rulemaking.

**Motion/Second:** Vice Chair Oshiro/Member Abdelmalek. Approved unanimously

Chair Grellner said he supported this change.

## **11. LOCAL HEALTH OFFICERS COMPLAINT – POSSIBLE ACTION**

Chair Grellner introduced the complaint filed on Dec 27, 2022, against local Public Health Officers, alleging local health officers have failed to take any steps to control COVID-19 and failed to protect the public by not complying with public health laws, rules, or regulations.

Member Abdelmalek indicated that she would recuse herself from this item as she is the Local Health Officer for Thurston County.

Member Hayes said it strikes her the complainant didn't list what they expected to happen, it was just listed broadly across all health officers that they didn't do their job. The lack of specificity leads to no specific information to do follow-up, therefore she recommends not moving forward.

Member Crawford said the complainant is from Snohomish County, and agrees with Member Hayes that there is nothing mentioned in the complaint describing what outcomes the resident was expecting other than listing what they think a local health officer should be doing. Member Crawford recollected how hard her health county board worked, saying Dr. Spitters addressed the cases and mobilized the staff at the health district. She said Dr. Lewis has been very proactive and she is perplexed by the complaint. She doesn't think the complaint is merited and recommended to not consider at this time.

Member Kutz said this pandemic has put everyone in a hard place. All jurisdictions had pushes and pulls from different directions, had people from both sides of the equation, from people wanting no masks to wanting masks required. We already know the difficulties around quarantine. We all know that if everyone was masked and quarantined there would be less cases, but our health officers generally worked through this complex process admirably, and they did the best they could, without absolute authoritarian rule, which would have been brought to a halt right away. Member Kutz made the motion to deny the complaint. While the complaint described a perfect world, it's not something that was achieved anywhere across the world in anywhere he saw.

**Motion:** The Board determines that the complaint does not merit a preliminary investigation due to lack of sufficient information indicating a possible violation of relevant public health law and directs staff to notify the complainant of the Board's decision.

**Motion/Second:** Member Kutz/Member Hayes. Approved unanimously

Scott Lindquist, State Medical Epidemiologist and Secretary's Designee, added that as a state epidemiologist, he understands the roles of health officers. He has no concerns with health officers in our state, and he finds the complaint non-specific and without merit.

Chair Grellner said he agrees with board member comments. He notes that while we've received push back from both sides, the perception that we have done too much is considerably higher than what we haven't done. The last two years we've had an astronomical number of comments that we have gone too far. The mask order as it stands now only address health care, long-term care, and corrections facilities. He doesn't believe the complaint has merit.

## **12. BOARD MEMBER COMMENTS**

Chair Grellner called for any comments.

Member Crawford shared that this may be her last meeting with the Board. Member Crawford, who represents Washington cities on the Board, said that the Snohomish Health District has integrated into Snohomish County as a public health department.



She said that with this transition, the composition of the Board is now changed, and she may no longer have a position within it. She said it was a pleasure to work with the Board and thanked Board members and staff.

Chair Grellner said that he hopes she does have a place on the Board and thanked Member Crawford for her service.

Chair Grellner and Members Flores, Kutz, and Hayes thanked Member Crawford and Ms. Campbell for their work at the Board and wished them well on their future endeavors. Member Flores thanked Ms. Dinardo for her presentation during the meeting.

Member Hayes shared that the Washington State Public Health Association is hosting a Public Health Legislative Education Day on February 23, 2023. She said this event will be a great opportunity to learn about public health issues under discussion in the legislature and to connect with other public health colleagues.

Chair Grellner encouraged Board members to attend the event as well and shared his experiences attending past years. He said that Board members could reach out to him, Member Hayes, or Executive Director Davis for further details.

Chair Grellner then shared that he recently spoke to John Austin, the previous Board Chair, who sent along his regards. He said that Mr. Austin recommended that the Board consider writing a letter of thanks to Dr. Stephen Fauci, who recently left his post at the federal level. Members Flores, Kutz, Hayes, and Abdelmalek shared their support for this idea.

## **ADJOURNMENT**

Keith Grellner, Board Chair, adjourned the meeting at 2:47 p.m.

## **WASHINGTON STATE BOARD OF HEALTH**

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Keith Grellner, Chair

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Anna Burns, Communications Consultant

Anna Burns joins the Washington State Board of Health as a Communications Consultant. Anna brings years of experience in communications and marketing. She provides support by assisting in the maintenance of the Board's external communication program.

Anna graduated from Saint Martin's University with a bachelor's degree in business administration with a focus in marketing. Prior to the Board, she worked within the Department of Health's COVID-19 Vaccine Program where her duties included coordinating messages and information for a broad variety of key publics and supporting subject matter experts in developing presentations and other materials for external partners. Anna is excited to expand her career and knowledge within public health and is looking forward to supporting the Board's work.



STATE OF WASHINGTON  
WASHINGTON STATE BOARD OF HEALTH

*PO Box 47990 • Olympia, Washington 98504-7990*

January 13, 2023

Dr. Anthony S. Fauci, M.D.  
c/o National Institute of Allergy and Infectious Diseases  
Office of Communications and Government Relations  
5601 Fishers Lane, MSC 9806  
Bethesda, MD 20892-9806

Re: Letter of Appreciation

Dear Dr. Fauci:

On behalf of the Washington State Board of Health and its immediate past Chair, John Austin, PhD, please accept this letter of thanks and appreciation for your steadfast and distinguished service to the United States— and the world community— to prevent, diagnose, and treat infectious diseases.

We appreciate your many years of competent and dedicated service to prevent unnecessary illness and death from infectious diseases, culminating with your unwavering work during the COVID-19 pandemic. Your grace, composure, and leadership, in the face of partisan politics and misinformation campaigns, on a scale of which our nation had never experienced, inspired and gave us courage to continue our public health work at the state and local levels during these unprecedented events.

Thank you for your dedication to public health and public service. We wish you and your family health and happiness for the days to come.

Best Regards,

Keith Grellner, Chair  
Washington State Board of Health

cc: Board members  
John Austin, PhD



STATE OF WASHINGTON  
WASHINGTON STATE BOARD OF HEALTH

*PO Box 47990 • Olympia, Washington 98504-7990*

January 11, 2023

Representative Gerry Pollet  
[Gerry.Pollet@leg.wa.gov](mailto:Gerry.Pollet@leg.wa.gov)

Sent Via Email

Dear Representative Pollet:

Thank you for the rulemaking petition you submitted to the Washington State Board of Health (Board) on December 19, 2022, requesting the Board take action to revise applicable sections of chapter 246-366A WAC, Environmental Health and Safety Standards for Primary and Secondary Schools, to reflect more protective standards for resting and remediation of lead in school drinking water established in E2SHB 1139 (Chapter 154, Laws of 2021).

The Board met on January 9, 2023 and after reviewing and discussing your petition, voted to deny your request, as explained below. The Board shares your desire to update its rules to reflect the latest science and best practices to assure students can learn and thrive in a safe environment. The Board appreciates the leadership you have provided in the legislature to pass E2SHB 1139 (Chapter 154, Laws of 2021) and put in motion needed standards to protect children from lead exposure.

Since the 2009-2011 biennium, the Legislature has put in place budget provisos preventing the Board from implementing any new or amended rules related to school environmental health and safety “until the rules and a final cost estimate have been presented to the legislature, and the legislature has formally funded implementation of the rules through the omnibus appropriations act or by statute.” Because of this, chapter 246-366A WAC is not currently in effect. Based on its interpretation of the budget proviso language, the Board does not believe there is clear direction from the Legislature to allow the Board to revise and implement its rules either in whole or in part. The Board interprets the lack of action by the Legislature to amend or remove the budget proviso as a prohibition of rule revision. This prevents the Board from revising its rules to align with E2SHB 1139. For these reasons, the Board denied your petition for rulemaking.

The Board is confident the specificity of the statute is sufficient to ensure that schools are taking necessary measures to protect children from lead exposure. The Board has been assured by our colleagues at the Department of Health and Office of the Superintendent of Public Instruction that they are working closely with schools to facilitate compliance with the law. The Board is willing to further support these efforts as appropriate.

In addition, the Board is eager to work with you and your colleagues at the Legislature to eliminate or revise the proviso in future operating budgets to allow the Board to update its rules to protect public health in school facilities. The Board feels this action is necessary to revise its rules to guarantee safe and healthy environments for Washington's school populations.

Per RCW 34.05.330, you may appeal the Board's decision to deny your rulemaking petition. An appeal must be made to the Governor within 30 days of the petition denial.

If you require further assistance, please don't hesitate to contact Michelle Davis, Board Executive Director, at (360) 236-4105, or at [Michelle.Davis@sboh.wa.gov](mailto:Michelle.Davis@sboh.wa.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Keith Grellner', with a long horizontal flourish extending to the right.

Keith Grellner, Chair



STATE OF WASHINGTON  
WASHINGTON STATE BOARD OF HEALTH

*PO Box 47990 • Olympia, Washington 98504-7990*

January 11, 2023

**Sent via email**

Dear John Gehman:

This letter is to inform you that the Washington State Board of Health (Board) reviewed your complaint against Washington's local health officers at its January 9, 2023, meeting. Your complaint alleged the failure of local health officers of the various counties of the State of Washington to carry out the laws, rules, and regulations relating to the COVID-19 pandemic.

The Board determined that the complaint did not warrant further investigation and dismissed the complaint for the following reasons. Board Members found your complaint to be overly broad and non-specific in nature. The complaint lacked evidence or specific instances of violations. The Board noted that your reflection of the Secretary of Health's mask order is in error. The Secretary's current order only covers healthcare and long-term care facilities, as well as some correctional facilities, and these facilities are responsible for enforcing this mandate. In summary, the Board interpreted your complaint as being more of an opinion and conjecture rather than an evidenced-based argument that local health officers are violating the law.

Board members noted their observations of, and experience with, local health officers during the pandemic, and reiterated their support for the incredibly difficult work that local health officers (and their agencies) managed during the course of the pandemic.

The Board now considers your complaint closed and will take no further action. Materials related to this matter are available on the Board's website.

Sincerely,

Michelle A. Davis  
Executive Director



# RULE-MAKING ORDER EMERGENCY RULE ONLY

**CR-103E (December 2017)  
(Implements RCW 34.05.350  
and 34.05.360)**

CODE REVISER USE ONLY

OFFICE OF THE CODE REVISER  
STATE OF WASHINGTON  
FILED

DATE: February 10, 2023

TIME: 1:07 PM

WSR 23-05-055

**Agency:** State Board of Health

**Effective date of rule:**

**Emergency Rules**

- ☒ Immediately upon filing.  
☐ Later (specify)

**Any other findings required by other provisions of law as precondition to adoption or effectiveness of rule?**

- ☐ Yes ☒ No If Yes, explain:

**Purpose:** The State Board of Health (board) adopted an emergency rule regarding certification and registration of proprietary treatment products used in on-site sewage systems and it was filed on October 13, 2022 (WSR 22-21-070). This filing followed the initial emergency rule filed in June 15, 2022 (WSR 22-13-101). Both emergency rules amended WAC 246-272A-0110 to allow manufacturers to make a written request to the Department of Health (department) to substitute components of a registered product's construction in cases of a demonstrated supply chain shortage or similar manufacturing disruptions that may impact installations, operation, or maintenance. The request must include information that demonstrates the substituted component will not negatively impact performance or diminish the effect of the treatment, operation, and maintenance of the original registered product.

This third emergency rule adopts the same process but with some minor changes to allow manufacturers of registered proprietary treatment products to replace components of their products that are not available due to supply chain shortages or similar manufacturing disruptions with like components, as long as the components will not negatively impact performance, treatment, operation, or maintenance of the original registered product.

The underlying justification for the initial and second emergency rule still applies because without the emergency rule, the current rule would impede home sales when maintenance of these devices is noted on home inspections for property transfers because replacement parts are unavailable. New construction is likewise impacted as many active or pending permits include on-site sewage systems using Salcor products. There are other manufacturers of disinfecting ultraviolet (UV) light systems that can be substituted into the proprietary treatment products that use Salcor products. Since the filing of the second emergency rule Salcor was sold and the new owner is working with NSF to get their products approved but this process will take several months. In order to continue to protect the public's health, safety, and welfare, it is necessary to adopt a third emergency rule to allow the department to consider written requests from manufacturers of proprietary treatment products for substitutes to proprietary treatment product components so their systems will be able to function properly without negatively impacting treatment, operation or maintenance during supply chain shortages. To date, three manufacturers have received department approval to substitute the Salcor 3G UV lamp with an alternate UV lamp.

In 2018, the board filed a CR-101, Preproposal Statement of Inquiry (WSR 18-06-082), to initiate permanent rulemaking and update the on-site sewage system rules. That rulemaking is still underway and is expected to conclude in 2023. As directed by the board at the June 8, 2022 meeting, the emergency rule amendment will be considered for incorporation into the permanent rulemaking that is currently underway.

**Citation of rules affected by this order:**

New: None  
 Repealed: None  
 Amended: WAC 246-272A-0110  
 Suspended: None

**Statutory authority for adoption:** RCW 43.20.050 (3)

**Other authority:**

**EMERGENCY RULE**

Under RCW 34.05.350 the agency for good cause finds:

- ☒ That immediate adoption, amendment, or repeal of a rule is necessary for the preservation of the public health, safety, or general welfare, and that observing the time requirements of notice and opportunity to comment upon adoption of a permanent rule would be contrary to the public interest.
- ☐ That state or federal law or federal rule or a federal deadline for state receipt of federal funds requires immediate adoption of a rule.

**Reasons for this finding:** : The board finds that in order to protect the public's health, safety, and welfare it is necessary to adopt the emergency rule to amend WAC 246-272A-0110 to allow the department to consider written request from manufacturers of proprietary treatment products to substitute a proprietary treatment product component so their systems may continue to function properly without negatively impacting performance or diminish the effect of the treatment, operation, or maintenance during supply chain shortages.

**Note: If any category is left blank, it will be calculated as zero.  
 No descriptive text.**

**Count by whole WAC sections only, from the WAC number through the history note.  
 A section may be counted in more than one category.**

**The number of sections adopted in order to comply with:**

Federal statute:	New	<u>0</u>	Amended	<u>0</u>	Repealed	<u>0</u>
Federal rules or standards:	New	<u>0</u>	Amended	<u>0</u>	Repealed	<u>0</u>
Recently enacted state statutes:	New	<u>0</u>	Amended	<u>0</u>	Repealed	<u>0</u>

**The number of sections adopted at the request of a nongovernmental entity:**

New	<u>0</u>	Amended	<u>0</u>	Repealed	<u>0</u>
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**The number of sections adopted on the agency's own initiative:**

New	<u>0</u>	Amended	<u>1</u>	Repealed	<u>0</u>
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**The number of sections adopted in order to clarify, streamline, or reform agency procedures:**

New	<u>0</u>	Amended	<u>0</u>	Repealed	<u>0</u>
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**The number of sections adopted using:**

Negotiated rule making:	New	<u>0</u>	Amended	<u>0</u>	Repealed	<u>0</u>
Pilot rule making:	New	<u>0</u>	Amended	<u>0</u>	Repealed	<u>0</u>
Other alternative rule making:	New	<u>0</u>	Amended	<u>1</u>	Repealed	<u>0</u>



**Date Adopted:** February 10, 2023

**Name:** Michelle Davis, MPA

**Title:** Executive Director Washington State Board of Health

**Signature:**

A handwritten signature in black ink, reading "Michelle A. Davis". The signature is written in a cursive style with a large, stylized "M" and "D".

**WAC 246-272A-0110 Proprietary treatment products—Certification and registration.** (1) Manufacturers shall register their proprietary treatment products with the department before the local health officer may permit their use.

(2) To qualify for product registration, manufacturers desiring to sell or distribute proprietary treatment products in Washington state shall:

(a) Verify product performance through testing using the testing protocol established in Table I and register their product with the department using the process described in WAC 246-272-0120;

(b) Report test results of influent and effluent sampling obtained throughout the testing period (including normal and stress loading phases) for evaluation of constituent reduction according to Table II;

(c) Demonstrate product performance according to Table III. All ~~((thirty-day))~~ 30-day averages and geometric means obtained throughout the test period must meet the identified threshold values to qualify for registration at that threshold level; and

(d) For registration at levels A, B, and C verify bacteriological reduction according to WAC 246-272A-0130.

(3) Manufacturers verifying product performance through testing according to the following standards or protocols shall have product testing conducted by a testing facility accredited by ANSI:

(a) ANSI/NSF Standard 40—Residential Wastewater Treatment Systems;

(b) NSF Standard 41: Non-Liquid Saturated Treatment Systems;

(c) NSF Protocol P157 Electrical Incinerating Toilets - Health and Sanitation; or

(d) Protocol for bacteriological reduction described in WAC 246-272A-0130.

(4) Manufacturers verifying product performance through testing according to the following standards or protocols shall have product testing conducted by a testing facility meeting the requirements established by the Testing Organization and Verification Organization, consistent with the test protocol and plan:

(a) EPA/NSF—Protocol for the Verification of Wastewater Treatment Technologies; or

(b) EPA Environmental Technology Verification Program protocol for the Verification of Residential Wastewater Treatment Technologies for Nutrient Reduction.

(5) Treatment levels used in these rules are not intended to be applied as field compliance standards. Their intended use is for establishing treatment product performance in a product testing setting under established protocols by qualified testing entities.

(6) Manufacturers may submit a written application to the department requesting to substitute components of a registered product's construction in cases of supply chain shortage or similar manufacturing disruptions that may impact installations, operation, or maintenance. The application must include a report stamped, signed, and dated by a professional engineer that demonstrates the substituted component will not negatively impact performance or diminish the effect of the treatment, operation, and maintenance of the original registered

product. The department's approval of the substituted component is in effect until it is rescinded by the department.

**TABLE I**

<b>Testing Requirements for Proprietary Treatment Products</b>	
<b>Treatment Component/Sequence Category</b>	<b>Required Testing Protocol</b>
<b>Category 1</b> Designed to treat sewage with strength typical of a residential source when septic tank effluent is anticipated to be equal to or less than treatment level E.	ANSI/NSF 40—Residential Wastewater Treatment Systems (protocols dated between July 1996 and the effective date of these rules)
<b>Category 2</b> Designed to treat high-strength sewage when septic tank effluent is anticipated to be greater than treatment level E.  (Such as at restaurants, grocery stores, mini-marts, group homes, medical clinics, residences, etc.)	EPA/NSF Protocol for the Verification of Wastewater Treatment Technologies/ EPA Environmental Technology Verification (April 2001)
<b>Category 3</b> Black water component of residential sewage (such as composting and incinerating toilets).	NSF/ANSI Standard 41: Non-Liquid Saturated Treatment Systems (September 1999)  NSF Protocol P157 Electrical Incinerating Toilets - Health and Sanitation (April 2000)
<b>Total Nitrogen Reduction in Categories 1 &amp; 2 (Above)</b>	Protocol for the Verification of Residential Wastewater Treatment Technologies for Nutrient Reduction/EPA Environmental Technology Verification Program (November, 2000)

**TABLE II**

<b>Test Results Reporting Requirements for Proprietary Treatment Products</b>	
<b>Treatment Component/Sequence Category</b>	<b>Testing Results Reported</b>
<b>Category 1</b> Designed to treat sewage with strength typical of a residential source when septic tank effluent is anticipated to be equal to or less than treatment level E.	Report test results of influent and effluent sampling obtained throughout the testing period for evaluation of constituent reduction for the parameters: CBOD <sub>5</sub> , and TSS:

Test Results Reporting Requirements for Proprietary Treatment Products	
	<input type="checkbox"/> Average <span style="float: right;"><input type="checkbox"/> Standard Deviation</span> <input type="checkbox"/> Minimum <span style="float: right;"><input type="checkbox"/> Maximum</span> <input type="checkbox"/> Median <span style="float: right;"><input type="checkbox"/> Interquartile Range</span> <input type="checkbox"/> 30-day Average (for each month) For bacteriological reduction performance, report fecal coliform test results of influent and effluent sampling by geometric mean from samples drawn within (( <del>thirty-day</del> )) 30-day or monthly calendar periods, obtained from a minimum of three samples per week throughout the testing period. See WAC 246-272A-0130. Test report must also include the individual results of all samples drawn throughout the test period.
<b>Category 2</b> Designed to treat high-strength sewage when septic tank effluent is anticipated to be greater than treatment level E.  (Such as at restaurants, grocery stores, mini-marts, group homes, medical clinics, residences, etc.)	Report all individual test results and full test average values of influent and effluent sampling obtained throughout the testing period for: CBOD <sub>5</sub> , TSS and O&G. Establish the treatment capacity of the product tested in pounds per day for CBOD <sub>5</sub> .
<b>Category 3</b> Black water component of residential sewage (such as composting and incinerating toilets).	Report test results on all required performance criteria according to the format prescribed in the NSF test protocol described in Table I.
<b>Total Nitrogen Reduction in Categories 1 &amp; 2 (Above)</b>	Report test results on all required performance criteria according to the format prescribed in the test protocol described in Table I.

**TABLE III**

Product Performance Requirements for Proprietary Treatment Products						
Treatment Component/Sequence Category	Product Performance Requirements					
<b>Category 1</b> Designed to treat sewage with strength typical of a residential source when septic tank effluent is anticipated to be equal to or less than treatment level E.	Treatment System Performance Testing Levels					
	Level	Parameters				
		CBOD <sub>5</sub>	TSS	O&G	FC	TN
	A	10 mg/L	10 mg/L	—	200/100 ml	—
	B	15 mg/L	15 mg/L	—	1,000/100 ml	—
	C	25 mg/L	30 mg/L	—	50,000/100 ml	—
	D	25 mg/L	30 mg/L	—	—	—
	E	125 mg/L	80 mg/L	20 mg/L	—	—
	N	—	—	—	—	20 mg/L
Values for Levels A - D are 30-day values (averages for CBOD <sub>5</sub> , TSS, and geometric mean for FC.) All 30-day averages throughout the test period must meet these values in order to be registered at these levels. Values for Levels E and N are derived from full test averages.						
<b>Category 2</b> Designed to treat high-strength sewage when septic tank effluent is anticipated to be greater than treatment level E.	All of the following requirements must be met:					

<b>Product Performance Requirements for Proprietary Treatment Products</b>	
<b>Treatment Component/Sequence Category</b>	<b>Product Performance Requirements</b>
(Such as at restaurants, grocery stores, mini-marts, group homes, medical clinics, residences, etc.)	(1) All full test averages must meet Level E; and (2) Establish the treatment capacity of the product tested in pounds per day for CBOD <sub>5</sub> .
<b>Category 3</b> Black water component of residential sewage (such as composting and incinerating toilets).	Test results must meet the performance requirements established in the NSF test protocol.
<b>Total Nitrogen Reduction in Categories 1 &amp; 2 (Above)</b>	Test results must establish product performance effluent quality meeting Level N, when presented as the full test average.

# Department of Health Updates





# What is Public Health?

“What we as a society do *collectively* to assure the conditions in which people can be healthy.”

- *The future of the Public's Health in the 21<sup>st</sup> Century*, Institute of Medicine, 2003



A dramatic sunset or sunrise over a city skyline. The sun is low on the horizon, partially obscured by large, dark, and textured clouds. The sky is filled with warm, golden light that filters through the clouds, creating a hazy atmosphere. In the foreground, the silhouettes of trees and buildings are visible against the bright sky. The city skyline in the background features several tall buildings, with the Space Needle being the most prominent structure in the center. The overall mood is contemplative and inspiring.

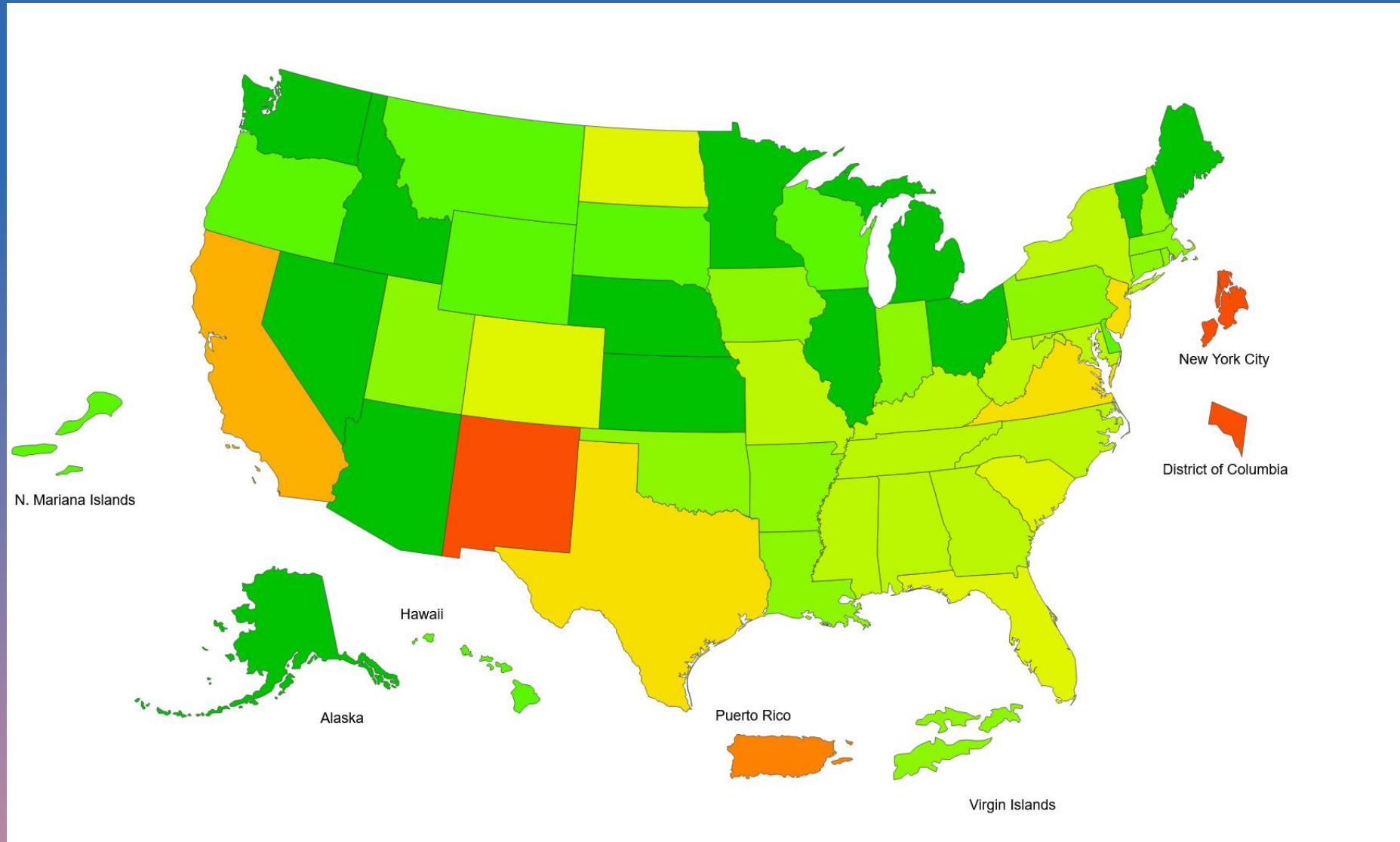
# Health

*Where Equity,  
Innovation and  
Engagement meet*



# Public Health Threats

# U.S. Influenza Activity



# U.S. Emergency Department Visits for Respiratory Disease

## Weekly Emergency Department Visits by Age Group

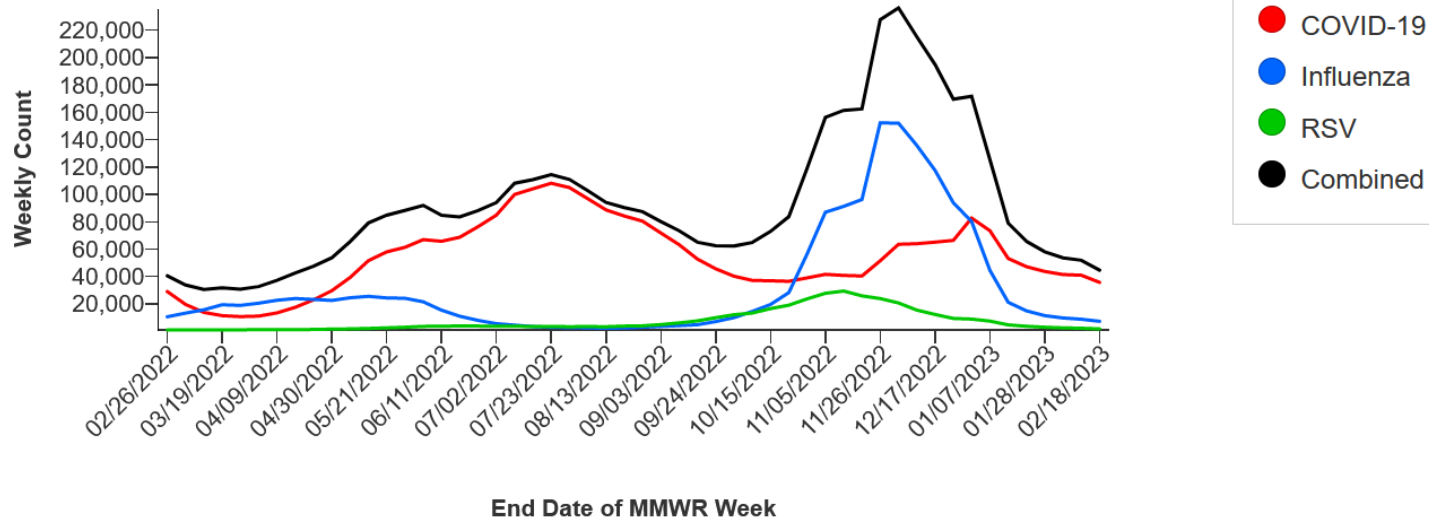
### Filters

#### Age Group

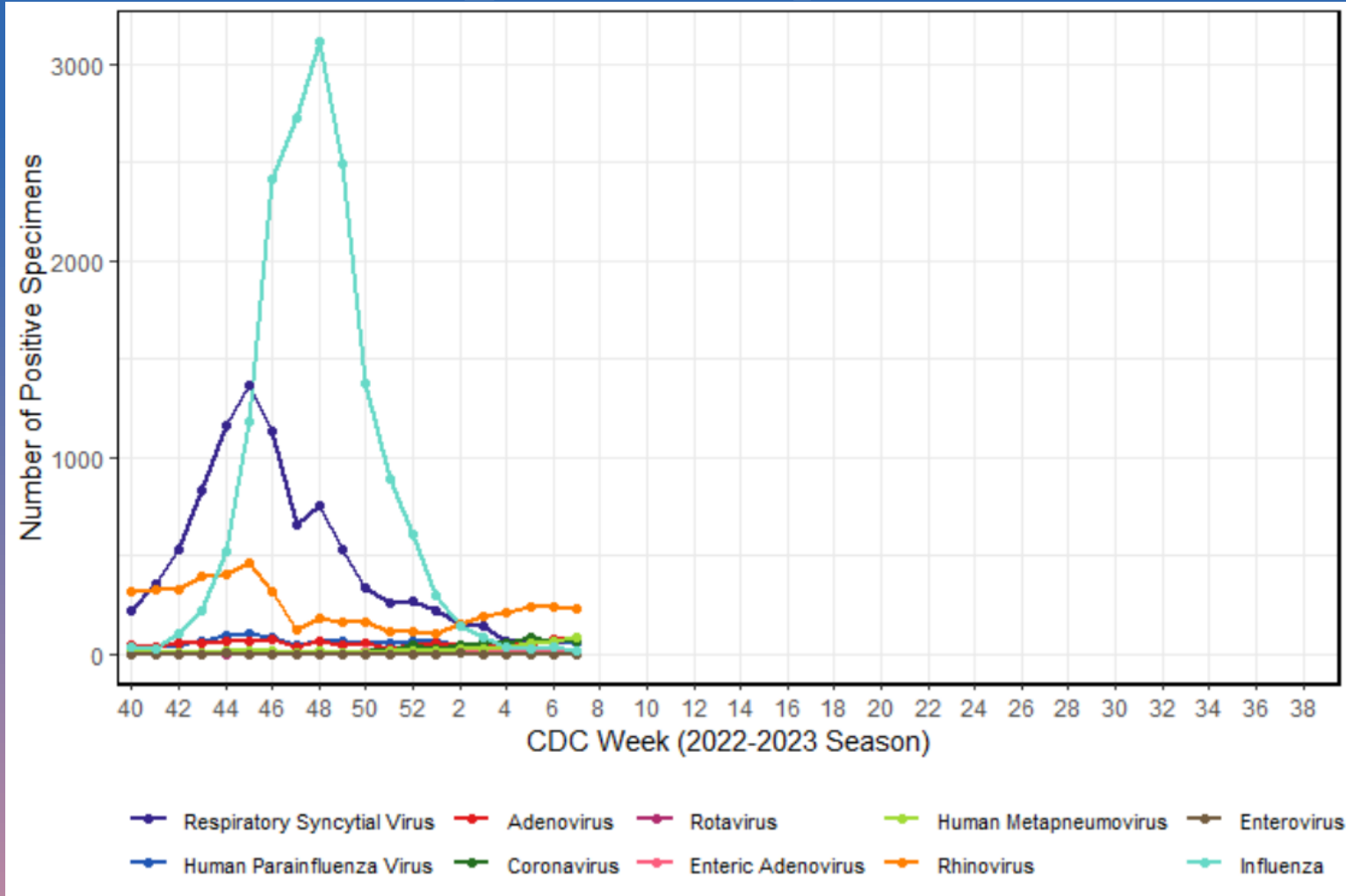
All Ages ▾

Apply Filters

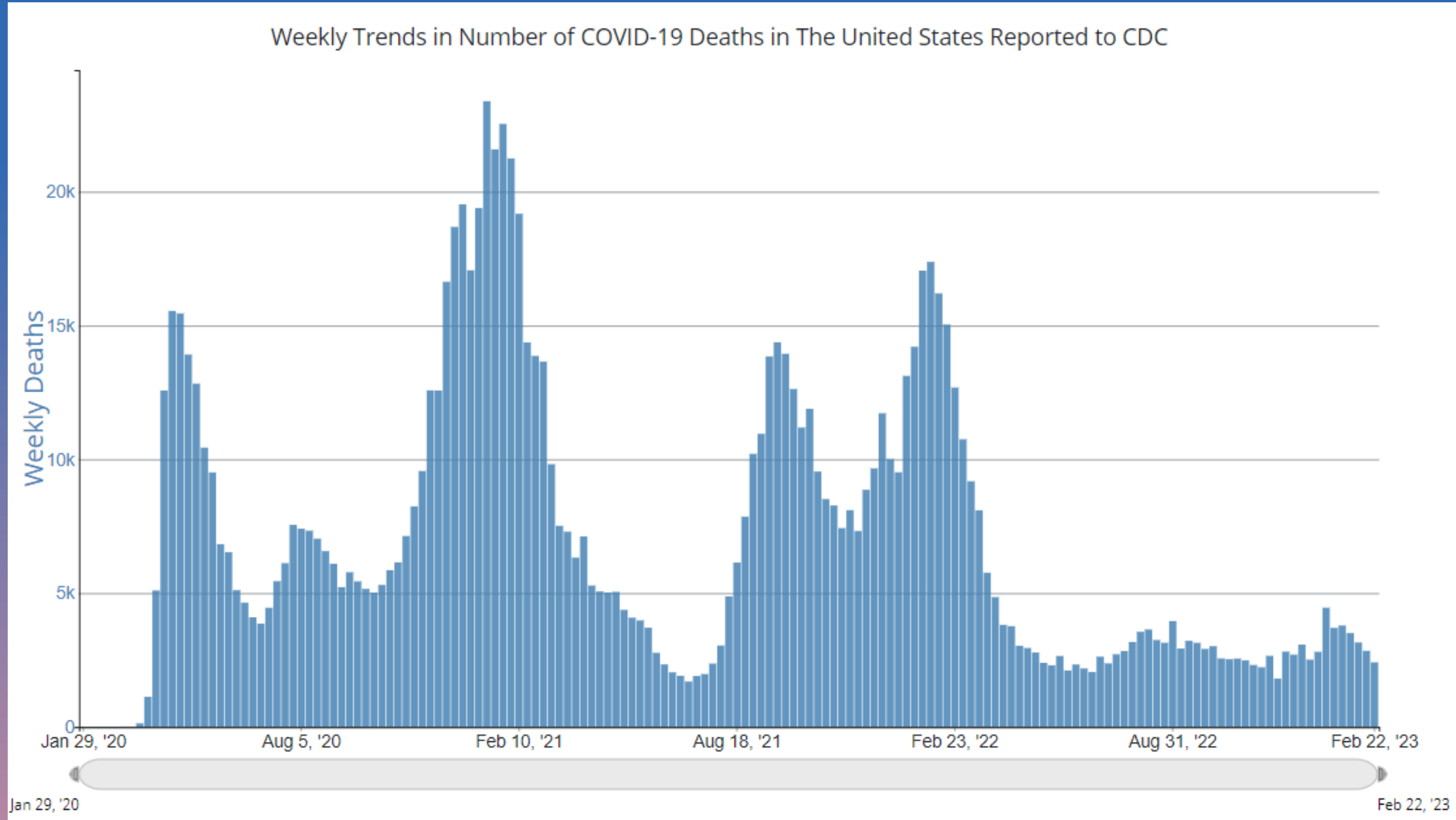
[Reset All](#)



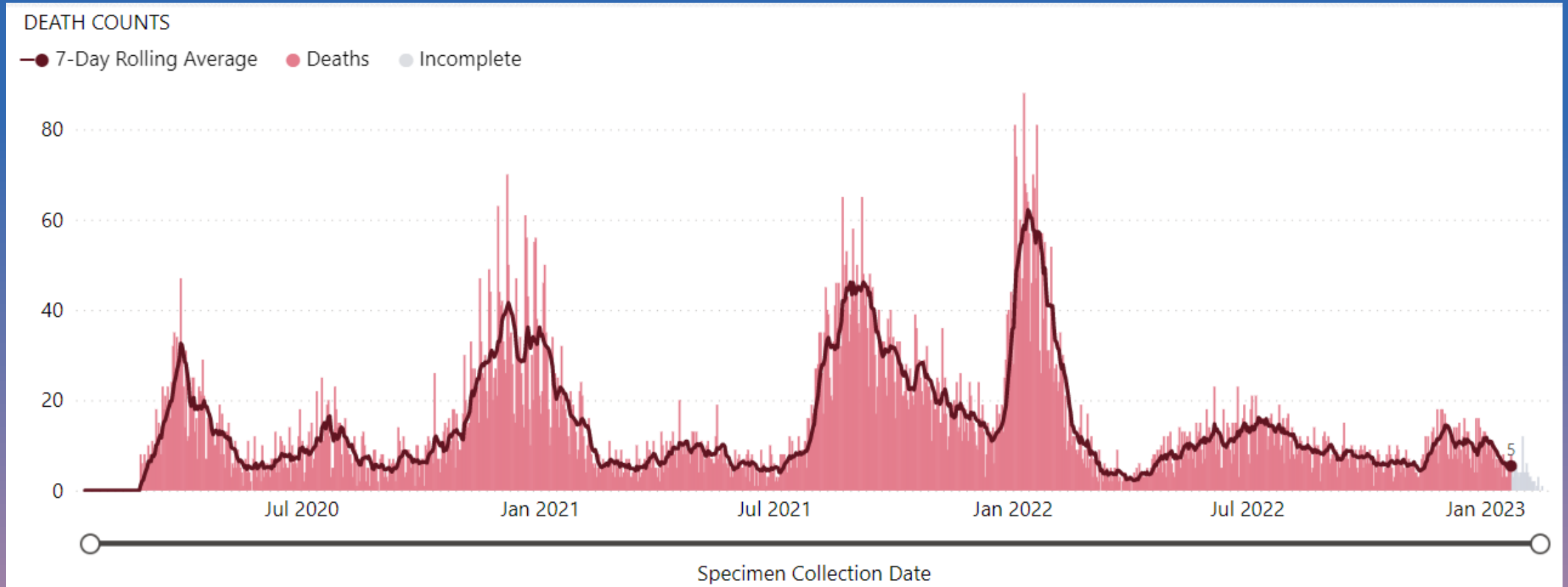
# Washington State Emergency Department Visits for Respiratory Disease



# COVID-19 in United States



# COVID-19 Washington State



# COVID-19 Federal Public Health Emergency Transition Roadmap

FOR IMMEDIATE RELEASE  
February 9, 2023

Contact: HHS Press Office  
202-690-6343  
[media@hhs.gov](mailto:media@hhs.gov)

## Fact Sheet: COVID-19 Public Health Emergency Transition Roadmap

Based on current COVID-19 trends, the Department of Health and Human Services (HHS) is planning for the federal Public Health Emergency (PHE) for COVID-19, declared under Section 319 of the Public Health Service (PHS) Act, to expire at the end of the day on May 11, 2023. Our response to the spread of SARS-CoV-2, the virus that causes COVID-19, remains a public health priority, but thanks to the Administration's whole of government approach to combatting the virus, we are in a better place in our response than we were three years ago, and we can transition away from the emergency phase.

Over the last two years, the Biden Administration has effectively implemented the largest adult vaccination program in U.S. history, with nearly 270 million Americans receiving at least one shot of a COVID-19 vaccine.

COVID-19 vaccine:  
vaccination program in U.S. history, with nearly 270 million Americans receiving at least one shot of a  
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COVID-19 vaccine.

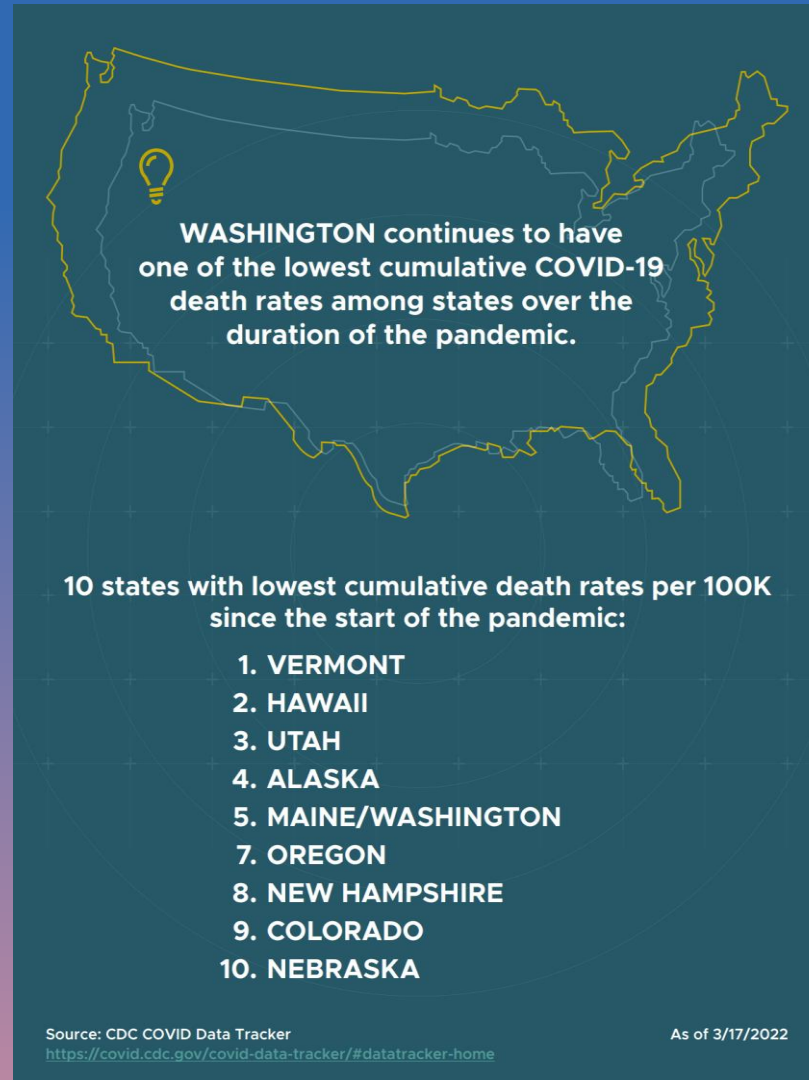
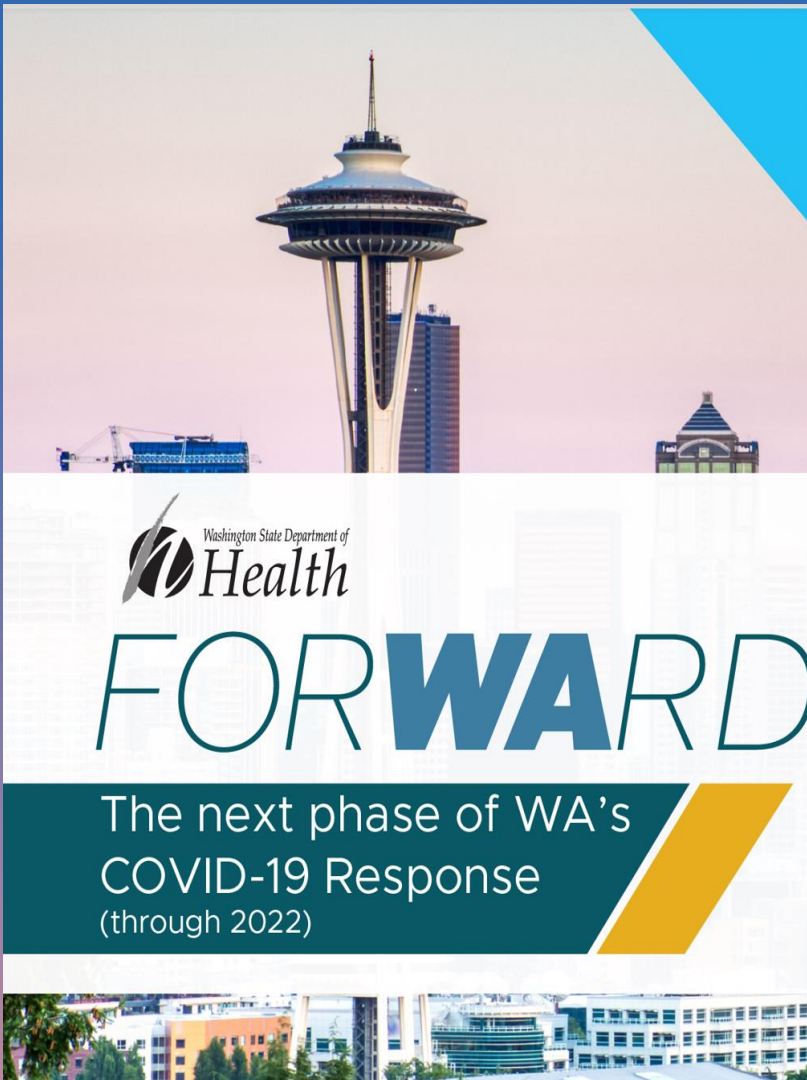
- **May 11, 2023, end of Section 319 PHE**
- **Congress extended Telehealth flexibility through 2024 and expanded Medicaid eligibility through FY23 Federal Omnibus.**
- **Free COVID vaccines remain until run out of federal stockpile. Granted under separate emergency authority.**
- **Paxlovid will continue to be provided until FDA approval.**
- **Federal free COVID tests will end.**



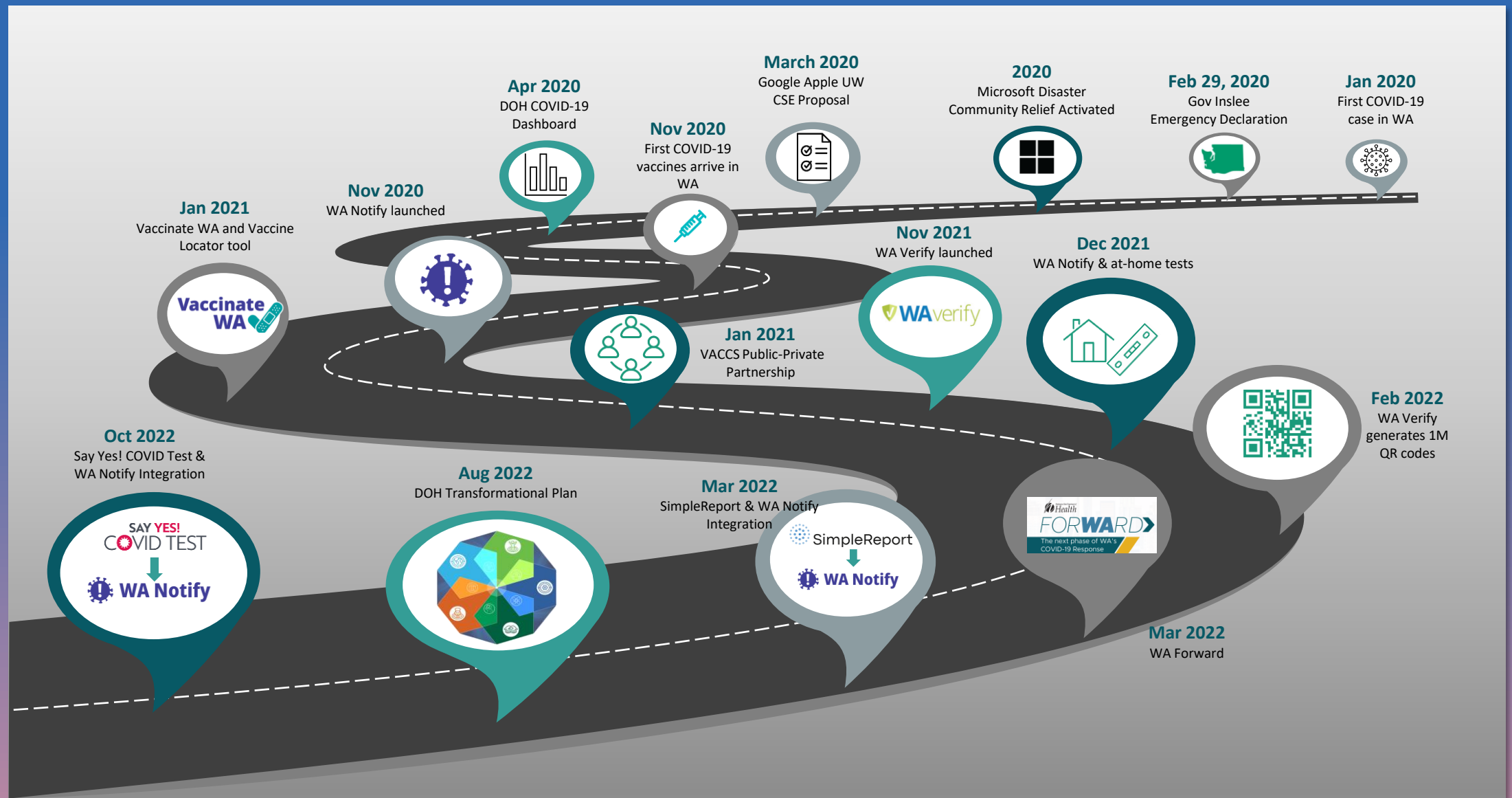
# WA Forward

## COMMITMENTS

- Engagement and empowerment
- Vaccination Capacity
- Testing Capacity
- Masks and PPE
- Continued surveillance, including sequencing and wastewater
- Health systems capacity monitoring and support
- Access to treatment







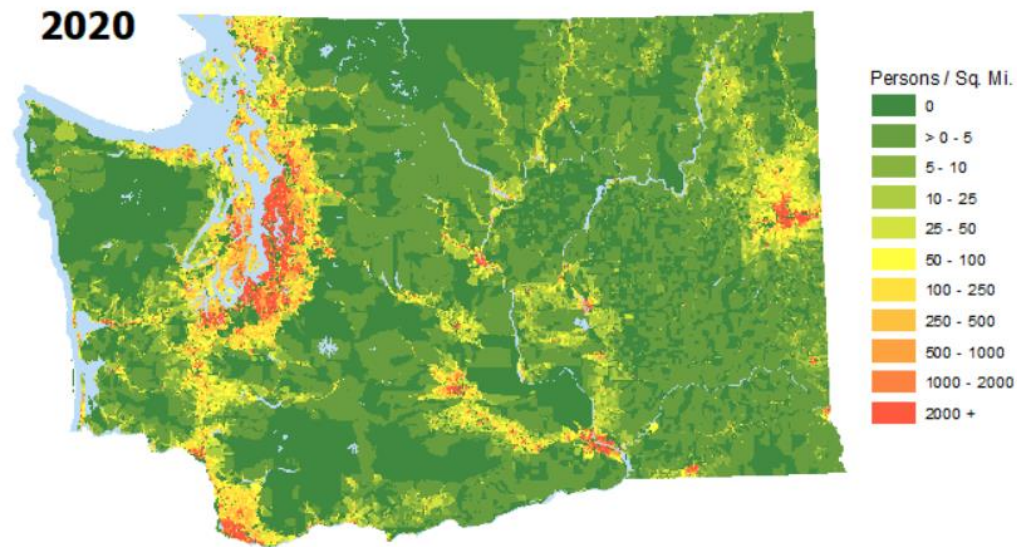
# State of Health

# Trust is foundational for change

*...trust is a prerequisite for collective action. But for many marginalized communities, trust is in short supply. One way to build trust is to learn from and empower the people you are trying to help.*

[Restoring Trust in Public Health: Lessons Local Health Coalitions | Commonwealth Fund](#)

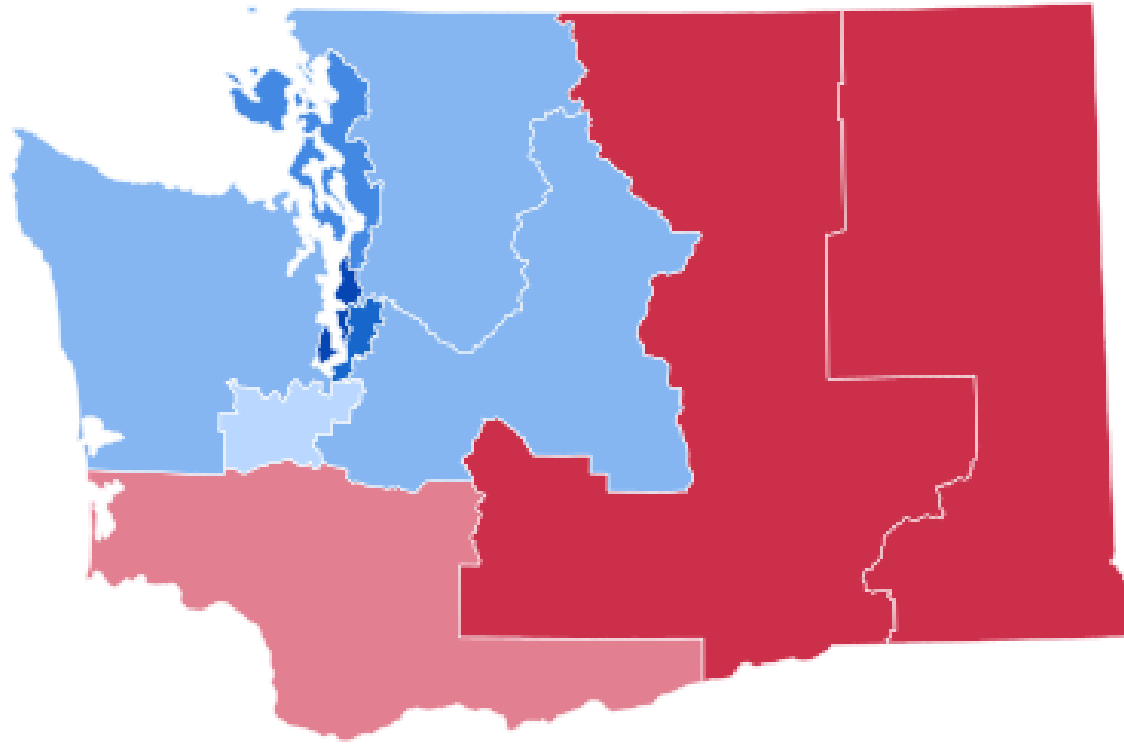
# Diversity and Disparities in Washington



[Population density by census block | Office of Financial Management \(wa.gov\)](#)

Images from Wikimedia Commons

# Political Geography in Washington



[File:Washington Congressional Election Results 2020.svg - Wikimedia Commons](#)

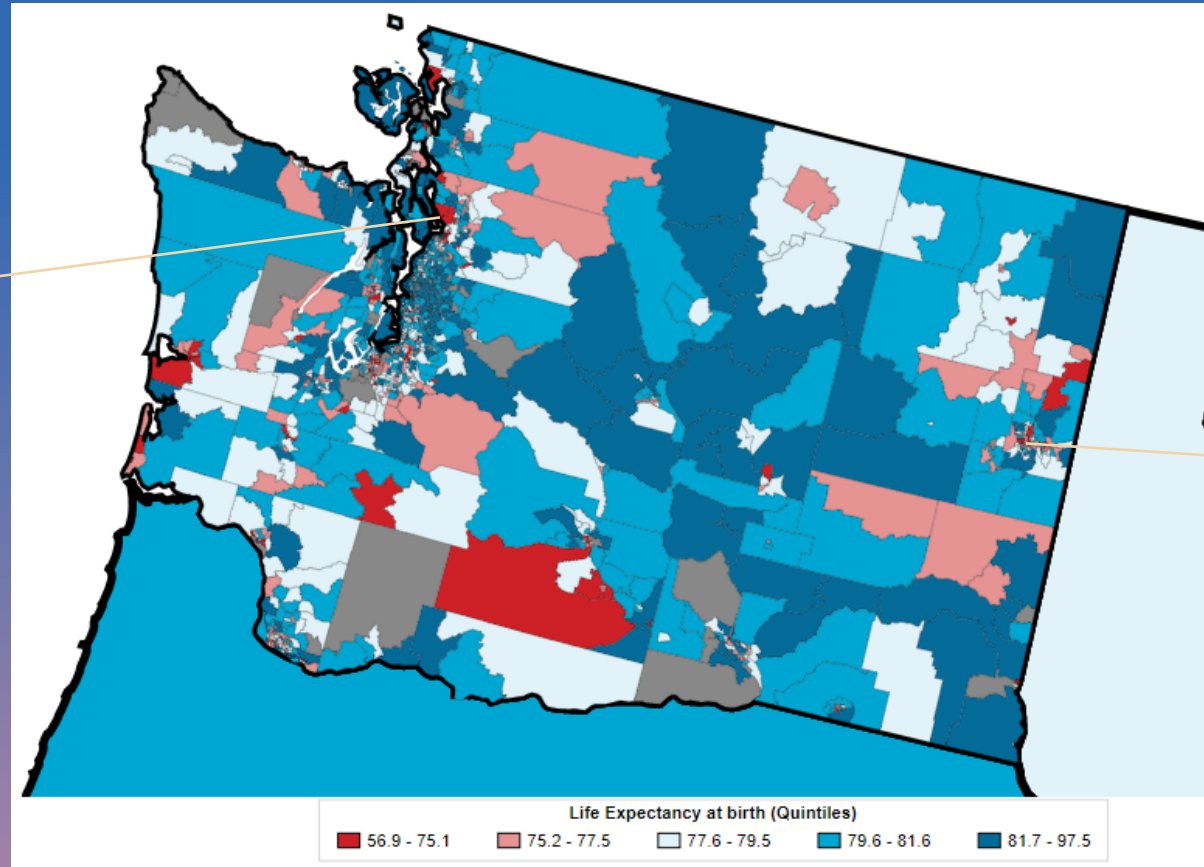
# Leading causes of death

Cause of Death	WA Decedents
Malignant Neoplasms	13,551
Heart Disease	12,788
Alzheimer's Disease/Dementia	5,475
COVID-19	5,450
Cerebrovascular Disease	3,194
Unintentional Injury, not overdose	2,998
Chronic Lower Respiratory	2,642
Diabetes Mellitus	2,238
Unintentional Drug Overdose	2,122
Chronic Liver Disease	1,409
Suicide	1,227
Homicide	333

Preliminary 2021 data, WA Center for Health Statistics

# Life Expectancy Disparities in Washington

Life  
expectancy  
88.8 years  
>Monaco &  
Japan

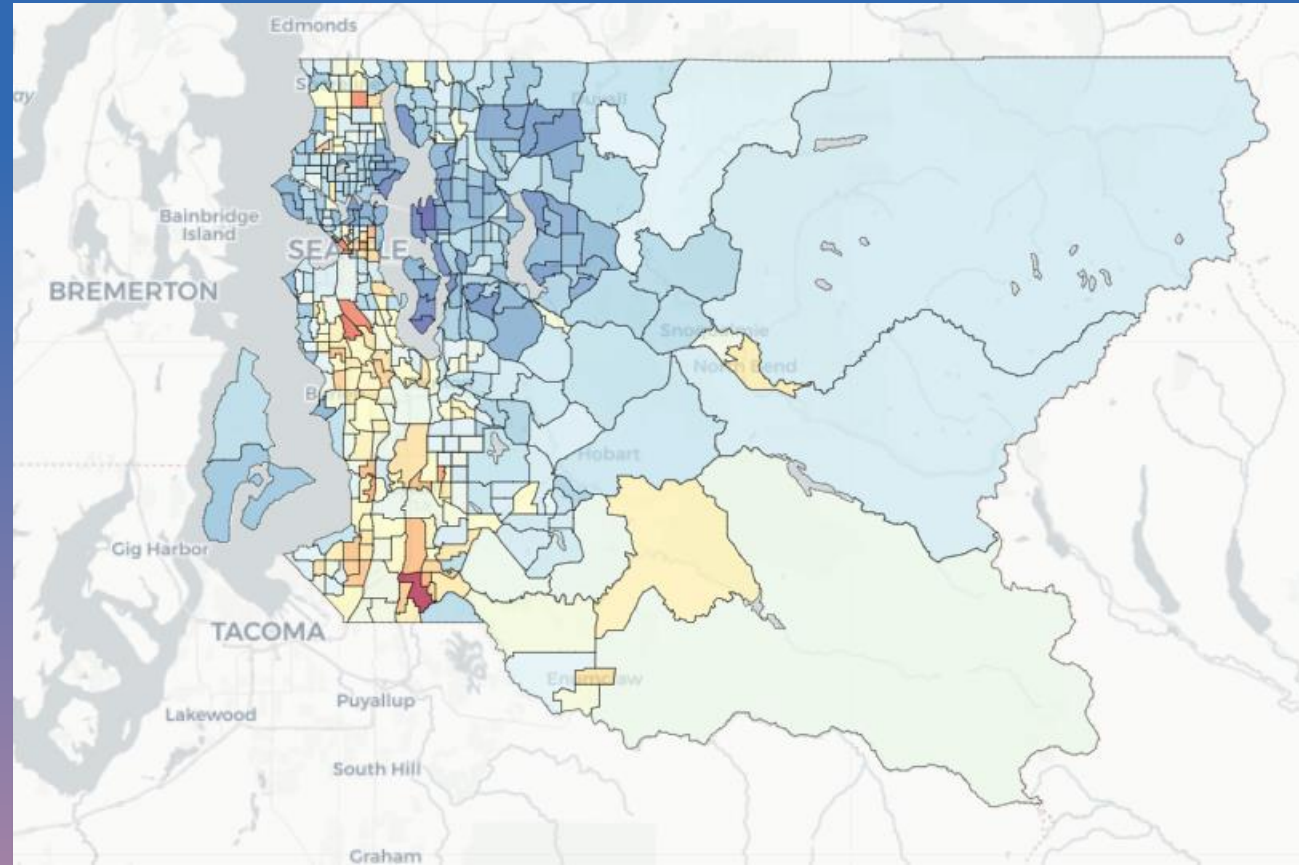


Life  
expectancy  
66.0 years  
<Rwanda &  
Pakistan

[Life Expectancy Data Viz \(cdc.gov\)](https://data.cdc.gov/)



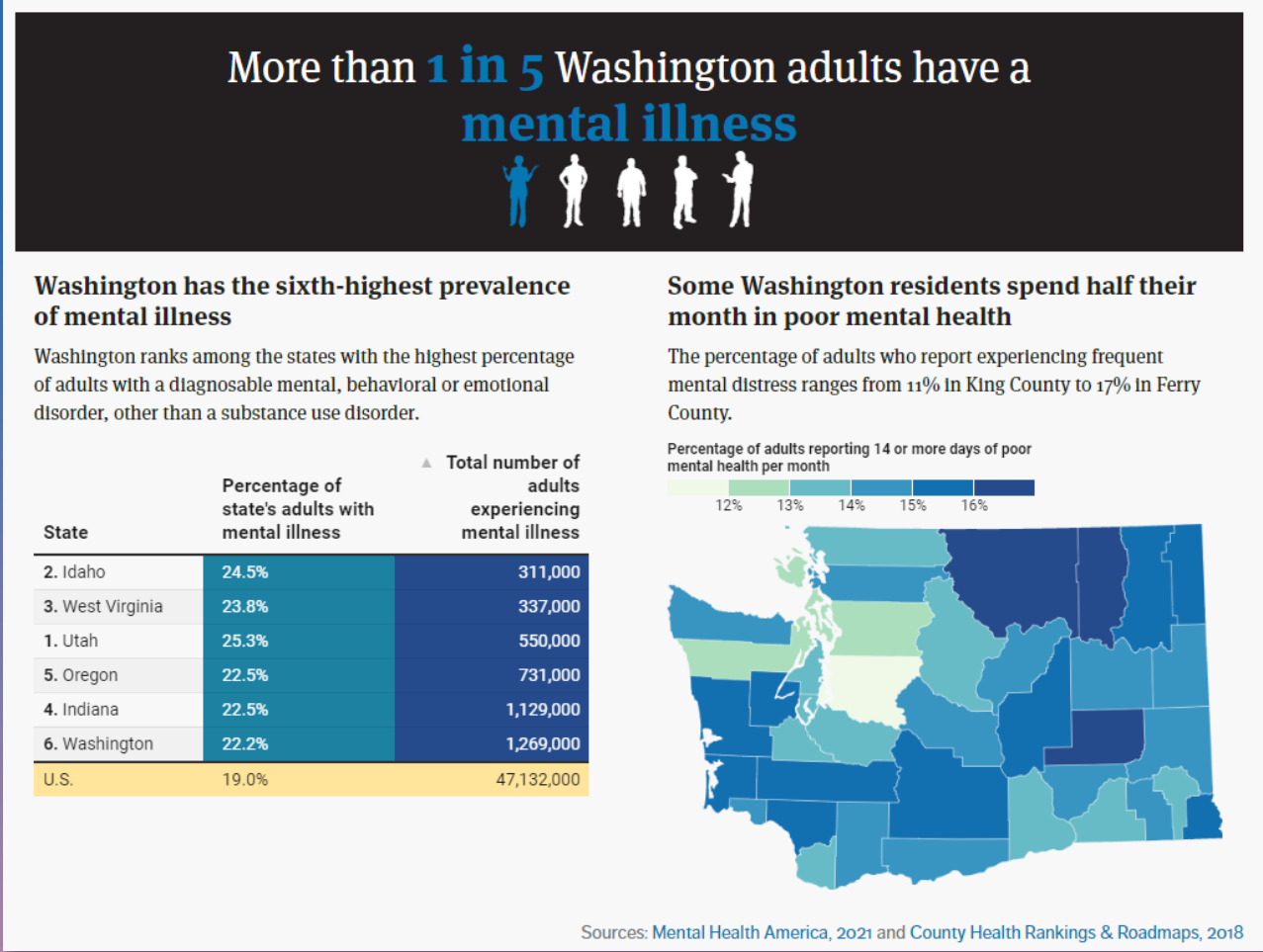
# Life Expectancy Disparities in King County



[VizHub - King County Census Tracts \(healthdata.org\)](https://vizhub.healthdata.org/king-county-census-tracts)



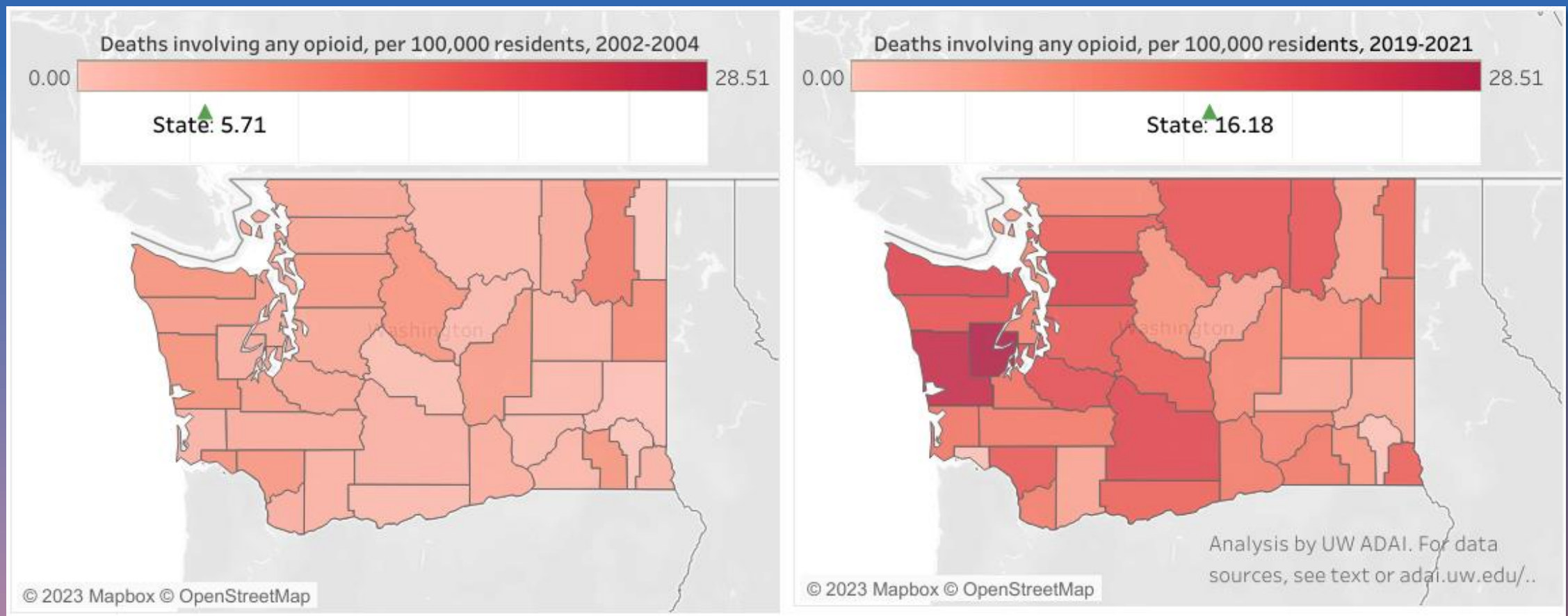
# Growing Burden of Mental Health Conditions



[Here are the basic facts about mental health and treatment in Washington state | The Seattle Times](#)

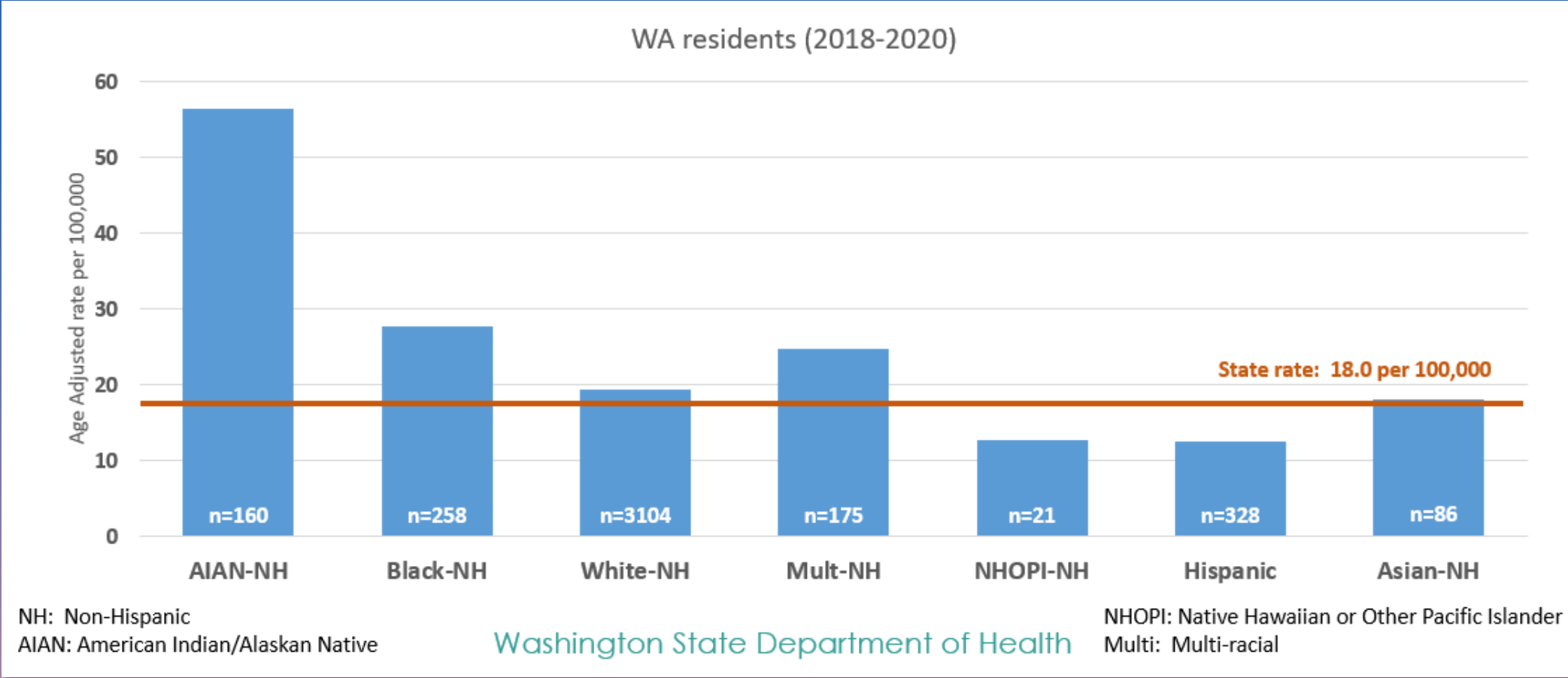
# Opioid Crisis in Rural and Urban Communities

OPIOID DEATH RATES 2002-2004 COMPARED TO 2019-2021



[Washington state opioid trends: Deaths](#)

# Overdose Deaths by Race



**WARRIORS PROTECT FAMILY AND COMMUNITY**

**BE A WARRIOR  
GET VACCINATED**

**Seven Generations  
Way of Living**



**Making Choices for the Health of Indigenous People  
Today, Tomorrow, and into the Future**  
**Tribal/Urban Indian Health Immunizations Coalition**  
<https://aihc-wa.com/immunizations>



# Transforming Our Public Health System Together



**FROM**  
**Transactional**  
**Health**

**TO**

*Transformational Health*





# WASHINGTON STATE DEPARTMENT OF HEALTH

## TRANSFORMATIONAL PLAN

### A VISION FOR HEALTH IN WASHINGTON STATE

#### OUR PRIORITIES AND VISION FOR TRANSFORMATIONAL HEALTH



##### I. HEALTH AND WELLNESS

All Washingtonians have the opportunity to attain their full potential of physical, mental, and social health and well-being.



##### II. HEALTH SYSTEMS AND WORKFORCE TRANSFORMATION

All Washingtonians are well served by a health ecosystem that is robust and responsive, while promoting transparency, equity, and trust.



##### III. ENVIRONMENTAL HEALTH

All Washingtonians will thrive in a broad range of healthy environments — natural, built, and social.



##### IV. EMERGENCY RESPONSE AND RESILIENCE

All Washington communities have the information and resources they need to build resilience in the face of myriad public health threats and are well-positioned to prepare for, respond to, and recover from emergencies and natural disasters.



##### V. GLOBAL AND ONE HEALTH

All Washingtonians live in ever-connected environments that recognize and leverage the intersection of both global and domestic health as well as the connections of humans, animals, and the environment.

#### TRANSFORMATIONS IN ACTION



INNOVATION AND  
TECHNOLOGY



COMMUNITY  
CENTERED



VISIBILITY  
AND VALUE



EQUITY  
DRIVEN



COLLABORATIVE  
ENGAGEMENT

**CORNERSTONE VALUES:** EQUITY • INNOVATION • ENGAGEMENT  
**VISION:** EQUITY AND OPTIMAL HEALTH FOR ALL



## PRIORITY II. HEALTH SYSTEMS AND WORKFORCE TRANSFORMATION

### VISION

All Washingtonians are well served by a health ecosystem that is robust and responsive, while promoting transparency, equity, and trust.

### COMMITMENT

We will align skills, resources, and partnerships to ensure our health systems and infrastructure capabilities are scalable, responsive, and modernized to promote data driven and innovative approaches to improving health. We will build and transform our systems to be accessible and responsive to Washingtonians regardless of who they are or where they live.

### KEY STRATEGIES

1. **Invest in and support** secure and innovative health information technologies and infrastructure supports that will enable partners to access and exchange information that addresses whole person health in a culturally and linguistically respectful way.
2. **Ensure** our public health, health care, and community-based partners and their workforce have the data, technology, and system supports they need to build and utilize connections among health, social, and community initiatives.
3. **Champion** the recruitment, development, and retention of a strong, capable, and diverse and inclusive state, local, and Tribal public health workforce and further policies and efforts that support, invest in, and diversify our health system workforce.
4. **Strengthen** the collection, analysis, linkage, and dissemination of timely, accessible, and actionable health data, guided by community priorities, to inform better community level interventions and initiatives that improve both individual and population health.
5. **Co-create** robust data sharing capabilities and systems with local health jurisdictions, with Tribes honoring Tribal data sovereignty, and other stakeholders to support better detection, understanding, and addressing of the burden of disease and health inequities.
6. **Invest in and leverage** previously developed tools, technologies, and strategies, including newer ones utilized during the COVID-19 pandemic such as interactive dashboards, communications pathways, and geospatial mapping to assist individuals, communities, health systems, and policy makers, to make data-informed decisions to promote health.

### MODERNIZING DATA ACCESS



DOH TRANSFORMATIONAL PLAN: A VISION FOR HEALTH IN WASHINGTON STATE | 4

### RESPONSE AND RESILIENCE

We will build resilience in the health system and its partners, ensuring they are well-prepared to respond to and recover from disasters and emergencies.

### BUILDING RESILIENCE



ensuring on behalf of Washingtonians and to minimize impact on people and lives, and advance protections in advance a broad range of public health threats and disasters.

1. **Recruit, develop, train, and retain** a robust and capable workforce prepared to respond in an emergency and institute planning initiatives to support response personnel in disaster response and recovery efforts integrating models of excellence and infrastructure advancements from a broad range of emergencies including the COVID-19 pandemic.
2. **Seek flexible and sustainable funding opportunities** to invest in activities that support robust response activities, workforce, tools, and the communities we serve and that allow for scarce resources to be equitably allocated.
3. **Support and prioritize** community-led solutions to mitigate barriers to optimal outcomes, survival, and resilience for all communities especially those most at-risk through a broad range of community engagement and response initiatives.
4. **Ensure resilience and behavioral health promotion planning** and implementation efforts are key components of current and future response activities serving community members, partners, and responders alike.



DOH TRANSFORMATIONAL PLAN: A VISION FOR HEALTH IN WASHINGTON STATE | 6



## PRIORITY V. GLOBAL AND ONE HEALTH

### VISION

All Washingtonians live in ever-connected environments that recognize and leverage the intersection of both global and domestic health as well as the connections of humans, animals, and the environment.

### COMMITMENT

We will lead the development and implementation of creative solutions to improve the health and well-being of Washingtonians emphasizing the interconnectedness of a strong bidirectional global-domestic health ecosystem. It will simultaneously underscore the importance of One Health recognizing the relationships of human health as they intertwine with that of animals and the environment.

### KEY STRATEGIES

1. **Incorporate** best practices from beyond borders to advance the health and well-being of Washingtonians and the communities in which they live through strong bidirectional pathways for advancing partnerships, key planning strategies, and communications efforts.
2. **Leverage** the collective strength and wisdom of existing and emerging global health and One Health stakeholders and institutions within and beyond Washington state to participate in and support robust and connected networks of information sharing, strategy development, and engagement.
3. **Seek** resources and funding as well as partnership opportunities to enhance capabilities across health systems to ensure a globally connected community of partners with particular emphasis on mentorship and training opportunities, system and technology enhancements, and engagement pathways to address domestic issues through global health learning.
4. **Advance** timely, culturally, and linguistically respectful health information and initiatives, in partnership with health system providers and communities, to support the health and well-being of refugees, immigrant, and migrant communities across Washington.
5. **Emphasize** the complex connections of human, animal, and environmental health in our health promotion activities and expand our capacity to prevent, detect, and respond to global public health threats with domestic health impact whether infectious disease or otherwise.
6. **Further and support** our important role in binational relations and connectedness with health partners and other key entities in Canada and beyond to advance information sharing, health systems knowledge, and strategy development.



DOH TRANSFORMATIONAL PLAN: A VISION FOR HEALTH IN WASHINGTON STATE | 7



## PRIORITY I. HEALTH AND WELLNESS

### VISION

All Washingtonians have the opportunity to attain their full potential of physical, mental, and social health and well-being.

### COMMITMENT

We will lead initiatives that support and promote upstream prevention efforts to advance optimal physical health, mental and behavioral health, spiritual health, resilience, and overall well-being where individuals, families, and communities can thrive. Our actions recognize that social, structural, and economic determinants of health must be addressed to achieve true health equity and optimal health for all.

### KEY STRATEGIES

1. **Promote** a broad range of initiatives that support pro-health and wellness behaviors and actions related to physical activity, nutritional health, mental and behavioral health, emotional and spiritual health, and comprehensive holistic health to advance both individual and community health across all of Washington.
2. **Support** community rooted and informed initiatives that address conditions early, including for adverse childhood experiences, and throughout the life course, to improve health and well-being longer term.
3. **Advance** a continuum of prevention and harm reduction strategies that address common risk and protective factors associated with injuries as well as use of alcohol, tobacco, marijuana, opioids, and other substances and related behaviors.
4. **Engage** partners and people with lived experience and embrace multilevel strategies to address upstream factors that contribute to the impact on key health concerns such as chronic disease, addiction, injuries, and the like.
5. **Utilize** morbidity and mortality data and strategies to inform action-oriented prevention programs and policy recommendations that address disproportionality in health outcomes.
6. **Deploy** proactive communication and health promotion strategies that promote mental and physical health wellness while countering stigma in seeking care.



DOH TRANSFORMATIONAL PLAN: A VISION FOR HEALTH IN WASHINGTON STATE | 3



## PRIORITY III. ENVIRONMENTAL HEALTH

### VISION

All Washingtonians live in healthy environments.

### COMMITMENT

We will lead broad factors impacting the environment, including air quality, water, and land use, to ensure a healthy environment for all.

### KEY STRATEGIES


1. **Support** system community health of healthy environment, and public health and environmental justice for community health.
2. **Ensure** our policies and programs support community well-being.
3. **Incorporate** data-driven approaches and community engagement strategies, assets and strengths, into public health and response planning efforts aimed at building resilience against the health and social impacts of climate change and other environmental challenges.
4. **Ensure** communities likely to bear the worst climate-related and environmental health impacts have resources and support to foster resilient communities that promote true health and well-being.
5. **Support** initiatives that promote safe and active living, commuting and recreation, reduce greenhouse gas emissions, and increase community cohesion.
6. **Communicate and promote** the health benefits of behavior change and interventions that protect our environment, while ensuring equitable access to health opportunities through robust data systems and information sharing.



DOH TRANSFORMATIONAL PLAN: A VISION FOR HEALTH IN WASHINGTON STATE | 5







## PRIORITY II. HEALTH SYSTEMS AND WORKFORCE TRANSFORMATION

VISION

COMMITMENT


KEY STRATEGIES






*All Washingtonians are well served by a health ecosystem that is robust and responsive, while promoting transparency, equity, and trust.*

We will align skills, resources, and partnerships to ensure our health systems and infrastructure capabilities are scalable, responsive, and modernized to promote data driven and innovative approaches to improving health. We will build and transform our systems to be accessible and responsive to Washingtonians regardless of who they are or where they live.

- Invest in and support** secure and innovative health information technologies and infrastructure supports that will enable partners to access and exchange information that addresses whole person health in a culturally and linguistically respectful way.
- Ensure** our public health, health care, and community-based partners and their workforce have the data, technology, and system supports they need to build and utilize connections among health, social, and community initiatives.
- Champion** the recruitment, development, and retention of a strong, capable, and diverse and inclusive state, local, and Tribal public health workforce and further policies and efforts that support, invest in, and diversify our health system workforce.
- Strengthen** the collection, analysis, linkage, and dissemination of timely, accessible, and actionable health data, guided by community priorities, to inform better community level interventions and initiatives that improve both individual and population health.
- Co-create** robust data sharing capabilities and systems with local health jurisdictions, with Tribes honoring Tribal data sovereignty, and other stakeholders to support better detection, understanding, and addressing of the burden of disease and health inequities.
- Invest in and leverage** previously developed tools, technologies, and strategies, including newer ones utilized during the COVID-19 pandemic such as interactive dashboards, communications pathways, and geospatial mapping to assist individuals, communities, health systems, and policy makers, to make data-informed decisions to promote health.

MODERNIZING DATA ACCESS





DOH TRANSFORMATIONAL PLAN: A VISION FOR HEALTH IN WASHINGTON STATE | 4



# Health Systems and Workforce Transformation





# Transformational Health: Structure

## ORGANIZATIONAL CHART



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Special Assistant

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Strategic Engagement & Planning Director

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State Health Officer/Chief Science Officer

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State Epidemiologist, Communicable Diseases  
Deputy Health Officer

Cathy Wasserman  
State Epidemiologist, Non-infectious Conditions

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Jessica Todorovich  
Chief of Staff

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Assistant Secretary,  
Environmental Public Health

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Assistant Secretary,  
Health Systems Quality Assurance

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Assistant Secretary,  
Prevention & Community Health

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Chief of Emergency  
Preparedness & Response

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Chief of Civil Rights & Risk Management

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Chief Financial Officer

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Courtney Dutra  
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NOVEMBER 2018



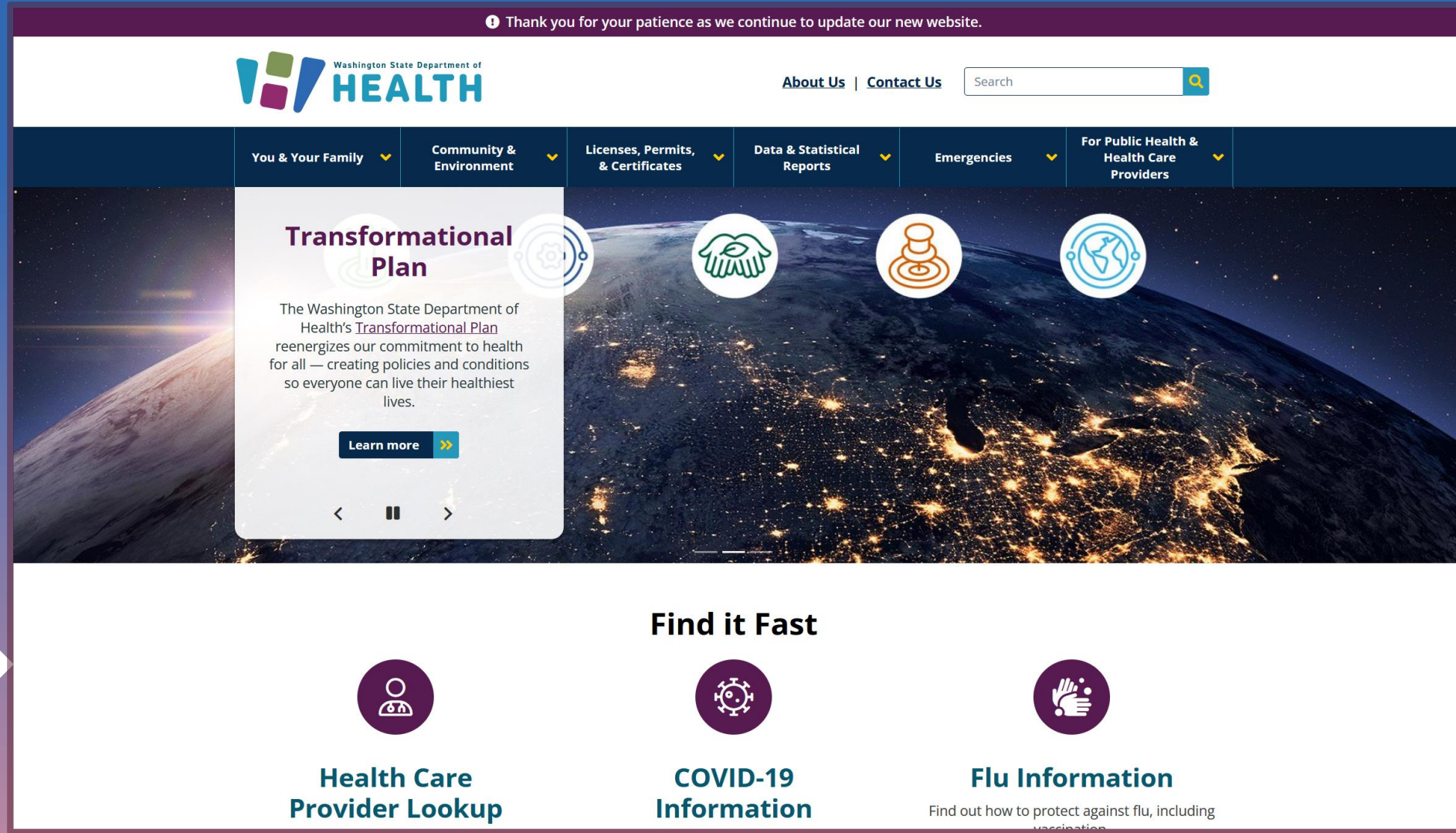
Office of the Secretary of Health  
**Umair A. Shah, MD, MPH**  
Secretary of Health



## Executive Leadership Team Office & Functions January 2023

Office of Chief of Staff	Office of Innovation & Technology	Office of Prevention, Safety & Health	Office of Strategic Partnerships	Office of Science & Health	Office of Public Affairs & Equity	Office of Policy, Planning & Evaluation	Office of Resilience & Health Security
Jessica Todorovich	Les Becker	Lacy Fehrenbach	Kris Holiday (acting)	Tao Sheng Kwan-Gett	Elizabeth Perez	Kristin Peterson	Nate Weed
Budget, Finance & Contracts	Informatics	Environmental Public Health	Local Health	Data Science	Communications	Policy & Regulatory Development	COVID
Risk Management & Business Services	Technology	Prevention & Community Health	Tribal Health	Disease Control & Health Statistics	Health Education	Public Health Law	Readiness & Response
Adjudicative Services	Innovation	Health Systems Quality Assurance	Private Partnerships	Medical Science	Health Promotion	System Transformation	Emergency Logistics
People & Culture	Data & System Modernization	Behavioral Health & Wellness	Academic Partnerships	Non-Infectious Disease Epi	Community Engagement	Economic Analysis & Evaluation	Resiliency & Recovery
Regional Health Offices					Equity	Legislative & Federal Affairs	Preparedness Grants & Contracts

# Transformational Health: Branding





# Transformational Health: Story-Telling



We invite you to view the premiere  
of our new speaker series



**Public Health Connects**  
a speaker series promoting equity, innovation, and engagement

Topic:  
**Resiliency: How to lead with heart  
during a time of crisis.**  
Feb. 15, 2023 | 1:00-2:00pm | Location: Virtual

Sign up to join the live event  
[doh.wa.gov/PHConnects](https://doh.wa.gov/PHConnects)

Speaker:  
**Abigail  
Echo-Hawk**



Host:  
**Dr. Umair A.  
Shah**



Washington State Department of  
**HEALTH**



# January 21, 2020

Health | Local News | Nation | Nation & World | Northwest | World

## Snohomish County man has the United States' first known case of the new coronavirus

Jan. 21, 2020 at 10:58 am | Updated March 11, 2020 at 1:08 pm



1 of 3 | At a news conference at the Washington state Department of Health's Public Health Laboratories on Tuesday, Dr. Satish Pillai of the Centers for Disease Control and Prevention joined other health professionals to discuss... (Greg Gilbert / The Seattle Times) [More](#)



The NEW ENGLAND JOURNAL of MEDICINE

### BRIEF REPORT

## First Case of 2019 Novel Coronavirus in the United States

Michelle L. Holshue, M.P.H., Chas DeBolt, M.P.H., Scott Lindquist, M.D., Kathy H. Lofy, M.D., John Wiesman, Dr.P.H., Hollianne Bruce, M.P.H., Christopher Spitters, M.D., Keith Ericson, P.A.-C., Sara Wilkerson, M.N., Ahmet Tural, M.D., George Diaz, M.D., Amanda Cohn, M.D., LeAnne Fox, M.D., Anita Patel, Pharm.D., Susan I. Gerber, M.D., Lindsay Kim, M.D., Suxiang Tong, Ph.D., Xiaoyan Lu, M.S., Steve Lindstrom, Ph.D., Mark A. Pallansch, Ph.D., William C. Weldon, Ph.D., Holly M. Biggs, M.D., Timothy M. Uyeki, M.D., and Satish K. Pillai, M.D., for the Washington State 2019-nCoV Case Investigation Team\*

### SUMMARY

An outbreak of novel coronavirus (2019-nCoV) that began in Wuhan, China, has spread rapidly, with cases now confirmed in multiple countries. We report the first case of 2019-nCoV infection confirmed in the United States and describe the identification, diagnosis, clinical course, and management of the case, including the patient's initial mild symptoms at presentation with progression to pneumonia on day 9 of illness. This case highlights the importance of close coordination between clinicians and public health authorities at the local, state, and federal levels, as well as the need for rapid dissemination of clinical information related to the care of patients with this emerging infection.



# Transformational Health: Strengthening Links





# Transformational Health: Strengthening Links

BLACK HISTORY MONTH 2023

Black Resistance

VIRTUAL/WEBINAR EVENT: FRIDAY, FEBRUARY 24, 2023 10-11AM PST

A panel discussion of health and wellness in the Black community to overcoming health disparities and social injustice.

MODERATOR: Kristopher Holiday, Washington State Department of Health



DR. UMAIR A. SHAH  
Secretary of Health  
Washington State  
Department of Health



MICHELLE Y. MERRIWEATHER  
Vice President  
Urban League of  
Metropolitan Seattle



LESLIE DAVID BRAXTON,  
D.MIN., M.DIV., B.A.  
Senior Pastor  
New Beginnings Christian  
Fellowship of Kent, WA

YOU ARE INVITED

## One Health

Needs Assessment Workshop  
in Washington State

March 22-23, 2023 | Central Washington University | Ellensburg, Washington

Washington State Department of Health

NORTHWEST PORTLAND AREA  
INDIAN HEALTH BOARD

*The Northwest Portland Area Indian Health Board invites you to partner with us, Tribal Nations, federal and state policy makers, and national and regional Tribal organizations to address the fentanyl crisis in our communities.*

**National Tribal Opioid Summit**  
**SAVE THE DATE: August 22-24, 2023**

Join us for the inaugural National Tribal Opioid Summit - Scan the QR CODE for Sponsorship Opportunities. Let's heal our Nations Together!

TULALIP TRIBES

TULALIP RESORT  
10200 QUIL CEDA BLVD  
TULALIP, WA 98271

National Indian  
Health Board

# Transforming Our Public Health System Together



- 1. Following a roadmap to unwind the public health emergency as we move beyond emergency response to COVID-19.**
- 2. Advancing Washingtonians health will require our health system to move from a transactional to transformational approach to address the social, structural, and environmental factors that result in health inequities.**
- 3. Focusing on key priorities such as public health urgencies/emergencies, maintaining core public health capacity, helping address workforce challenges, core investments, and partnerships & community-rooted efforts.**



# Working together for a brighter future



Washington State Department of  
**HEALTH**

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# WASHINGTON STATE BOARD OF HEALTH

**Date:** March 8, 2023

**To:** Washington State Board of Health Members

**From:** Keith Grellner, Chair

**Subject:** Findings of the University of Washington Report on School Environmental Health & Safety

## Background and Summary:

The legislature included a proviso in the 2021-23 state operating budget (ESSB 5693) directing the Washington Department of Health (Department) to contract with the University of Washington to research and develop a report by December 31, 2022, regarding school environmental health and safety policies and standards. Specifically, the proviso called for the report to include:

- A review of policies and regulations in other states pertaining to environmental health in K-12 schools;
- Literature and recommendations for exposure standards and remediation levels which are protective of health and safety for students in schools;
- A summary of activities, such as inspections, management, control levels, and remediation of a variety of contaminants and issues, including PCBs, lead, asbestos, poor ventilation, and mold; and
- Recommendations for next steps for policies and standards in Washington schools.

Today, Juan Gamez Briceno of the Department will brief the State Board of Health (Board) on the findings of the University of Washington report. Mr. Gamez Briceno manages programs for schools, lodging, and other issues in the Department's Office of Environmental Health and Safety. This is an informational briefing involving no Board action.

This research intersects Board interests and authority regulating school environmental health and safety. While not the focus of today's presentation, as a reminder, chapter 246-366 WAC, Primary and Secondary Schools, serves as the Board's active school rules. Implementation of chapter 246-366A WAC, Environmental Health and Safety Standards for Primary and Secondary Schools, remains blocked by a proviso in the state operating budget.

## Staff

Stuart Glasoe

(continued on the next page)



Washington State Board of Health

March 8 Meeting Memo

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# UNIVERSITY OF WASHINGTON REPORT



Environmental Health and Safety Study: K-12 Schools

Presenter:

State Board of Health Meeting

03.08.2023



**Juan C. Gamez Briceno**

*Local Support Section Manager*

Office of Environmental  
Health and Safety

## Statement of Work:

- The Washington State Department of Health (WSDOH) contracted the University of Washington Department of Environmental & Occupational Health Sciences (UW DEOHS) to develop a report to the legislature regarding school environmental health and safety policies, recommendations, and standards, due December 31<sup>st</sup>, 2022.

## Statement of Work:

- **Recommendations & best practices** for Polychlorinated biphenyls (PCBs) exposure standards and remediation levels.
- Summary of the **WA K-12 Environmental Health and Safety Guide** and Local Health Jurisdiction oversight activities.
- Comparing the **WA K-12 Environmental Health and Safety** standards, activities, and best practices with other states.
- Content analysis of **K-12 Environmental Health and Safety** policies and regulations in other states.
- Summary of **K-12 Environmental Health and Safety** recommendations for policy and next steps.

# Background

- What are Polychlorinated biphenyls (PCBs)?
- Regulations applying to PCBs in Washington schools:
  - Schools vs. other buildings
  - Federal vs. State
- Best practices for addressing and assessing PCBs in schools.
- What were other states doing to address PCBs in their schools?
- What do we know is the scope of the problem of PCBs in WA schools ?



## Polychlorinated biphenyls (PCBs)

- Polychlorinated biphenyls were chemicals produced and used in construction, planning, and building structures between 1950 and 1980.
  - Found as a plasticizer in building materials such as paints, caulks, etc.
  - Found in electric equipment such as transformers, capacitors in light ballasts.
- Health Effects:
  - Classified as a probable human carcinogen—specifically liver and skin (melanoma).
  - Non-cancer effects such as immune, reproductive, endocrine, neurological.

## COMMON BUILDING MATERIALS CONTAINING PCBs



LIGHT  
BALLASTS



DUCT  
SEALANTS



GALBESTOS  
ROOFING/SIDING



PAINT



DOOR/WINDOW  
CAULK

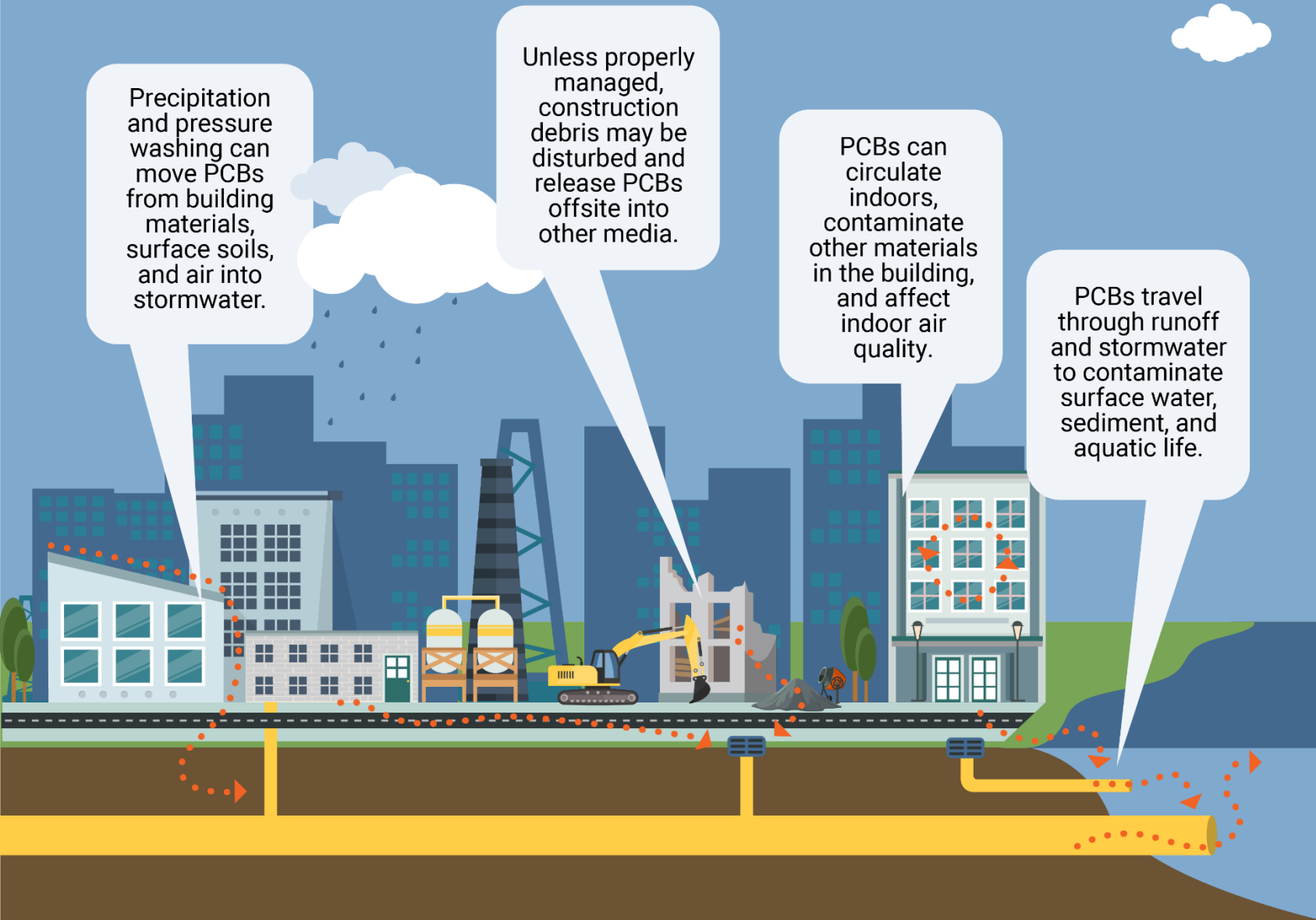


JOINT  
MATERIAL

## Common Building Materials Containing PCBs

- PCBs can be volatile and found in the ambient air around us
- PCBs can be found on various surfaces
- PCBs can leach from one material to another

## PCB CONTAMINATION PATHWAYS



How do PCBs in building materials affect people and the environment?

- Construction debris
- PCBs in the air
- PCBs in the stormwater
- Precipitation and pressure washing

# Toxic Substance Control Act (TSCA) Findings:

- Banned by the EPA in 1979, with exceptions.
- PCBs above a certain concentration in materials are not allowed and must be removed and disposed of properly.
- There are no current requirements to test for PCBs (air or building materials).
- Enclosed use is authorized. However, non-leaking lights are still allowed.
- Best practices for PCBs in schools are from EPA guidelines.
- EPA developed exposure level limits for indoor air in schools.



EPA developed  
exposure  
levels for  
indoor air in  
schools

- PCB concentrations in dusts and soils in and around schools.
- Adults and children are in schools for 8 hours per day with potential exposure.
- Adults and children are in schools for 185 days per year.

# EPA PCB exposure level limits:

Exposure Levels for Evaluating PCBs in School Indoor Air (ng/m3)*						
Age: 1- <2 yr	Age: 2- <3 yr	Age: 3- <6 yr	Age: 6-<12 yr elementary school	Age: 12- 15< yr middle school	Age: 15- <19 yr high school	Age: 19+ yr adult
100	100	200	300	500	600	500

## Findings:

- The scope of the PCB problem in Washington schools is unknown.
- There is limited sampling data of PCBs in air/on surfaces or PCBs in building materials in schools.
- PCBs are likely present in Washington schools' structures built and/or renovated before 1980, though implications for potential PCB exposures are unknown.
  - 1681 Washington public-schools buildings built or renovated before 1980 ( which is roughly around 30% of all public-school buildings in WA).
  - PCBs have been found in older schools in WA and other states in air, on surfaces (some levels higher than EPA guidelines), and high concentration in some caulking.

## Findings:

- PCBs Best practices and other regulations
- The state of Vermont has a new 2021 rule:
  - ✓ Requiring sampling of airborne PCBs in schools built or renovated before 1980
  - ✓ 2 schools with results above action level
  - ✓ 4 schools with results below action level

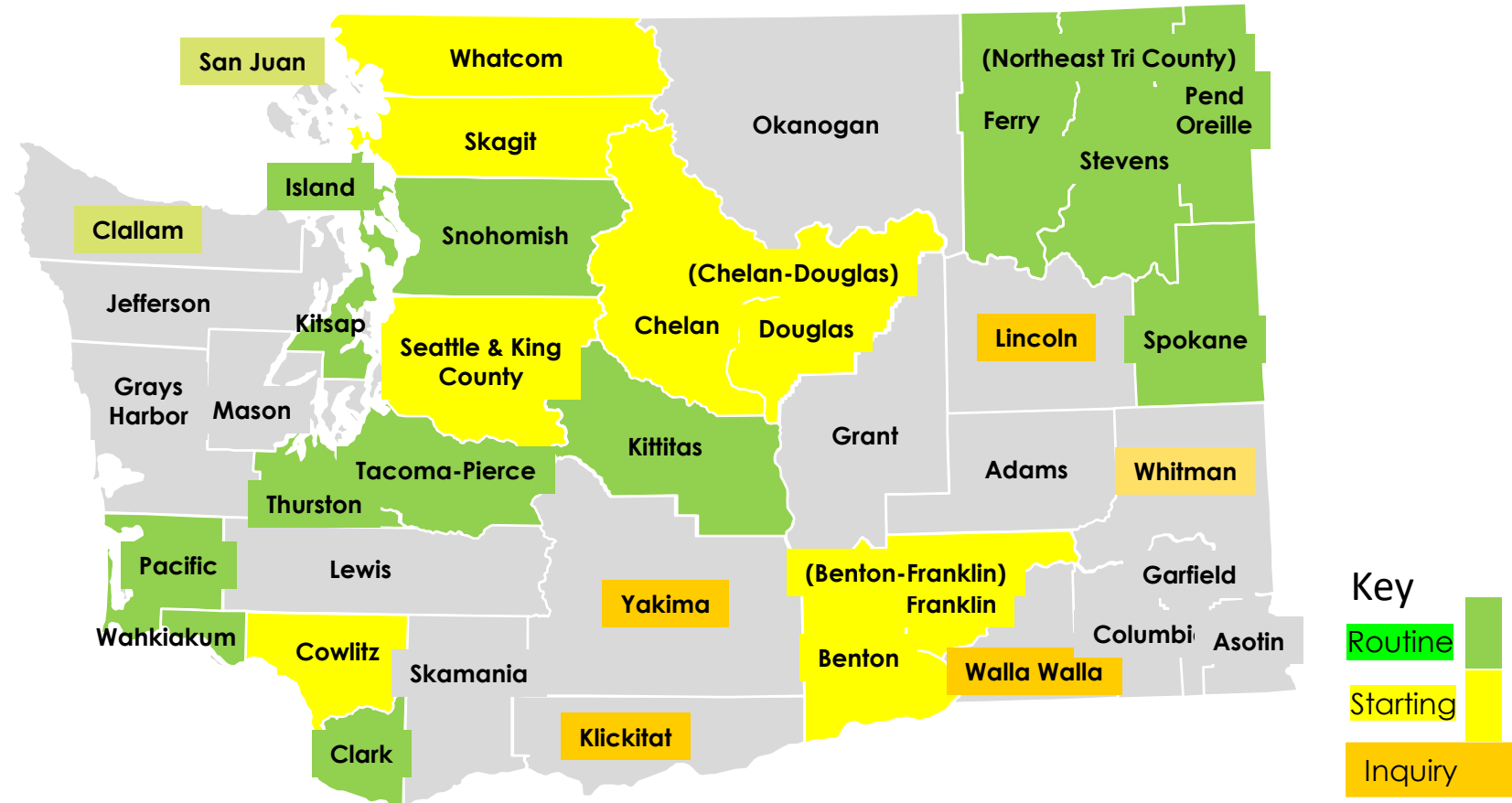


# Findings:

- Local Health Jurisdiction (LHJs) Survey:
  - Survey was sent to 39 LHJs.
  - 22 of 39 LHJs responded.
  - Questions sourced from: EPA Model K-12 schools EH Program, DOH Health and Safety Guide for K-12 schools, WAC 246-366 & 246-366A, DOH school EH Survey (2004), and EPA Tools for schools.
  - Question topics: school inspections, guidance utilized, barriers & needs, complaints, enforcement & corrective action, support capacity, training.

# Local Health Jurisdiction

## School Environmental Health & Safety Inspection Programs



- Schools in all 39 counties in the state receive food service inspections, construction plan review and complaint response from their local health jurisdiction.
- Seventeen Local Health Jurisdictions have or are starting school programs with periodic routine inspections. Seven more are starting the process of implementing a program.

# LHJ: School EHS Inspection Program:

- Survey findings:
  - Barriers to implementation were found.
  - Perceived school barriers.
  - Facilitating factors for implementation.
  - Support needed from state agencies.
  - Support needed from legislators to remove the proviso from the budget.

## LHJs: School EHS Inspection Programs:

- Guidance and regulations are out of date.
- DOH's school EHS Program is critical.
- Limited capacity and data available.
- Top needs from legislators:
  - Funding; and
  - Updates to rules Chapter 246-366 WAC.



## Content Analysis findings:

- Chapter 246-366 WAC (1991) is out of date relative to other regulations reviewed by UW DEOHS.
  - Of 13 regulations from other states reviewed, all were updated since 2002.
- Currently, Chapter 246-366 WAC does not sufficiently address existing and emerging hazards.
  - Other state regulations can provide guidance in development of a more comprehensive code.
- Other states have built collaborative mechanisms into regulations.
  - Balance of agency at school/district level and enforcement ability.

## Recommendations:

- Quantify the scope of PCBs.
- Establish inspection, testing, and remediation requirements, as in the state of Vermont.
- Funding to address PCBs.
- Focus on improving ventilation, filtration, and cleaning procedures.
- Update the school rule once the budget proviso is removed.

## Next steps for DOH:

- Update the Health and Safety Guide for K-12 schools.
- Continue LHJ schools' Partners meetings.
- Establishing new positions at DOH's schools Program thanks to FPHS funding:
  - Indoor Air Quality Specialist
  - Plan Review Specialist
- Provide training and technical assistance to improve ventilation, chemical storage, identify school hazards and best practices, and other informational opportunities for schools in WA.

Questions?





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# Environmental Health and Safety Study in Washington's K-12 Schools

Report to the Washington State Legislature  
December 2022



**The authors would like to acknowledge the contributions of the following partners to this study:**

The Washington State Department of Health

The Washington State Department of Ecology

The Office of Superintendent of Public Instruction

U.S. Environmental Protection Agency

Local health jurisdictions across Washington state

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# Environmental Health and Safety Study in Washington's K–12 Schools

Report to the Washington State Legislature  
December 2022



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# Executive summary

## Project overview

To date, approximately \$577 million in settlements and jury judgments have been awarded as a result of the improper management of leaking polychlorinated biphenyls (PCBs) containing light ballasts on one Washington state school campus. Significant media coverage of the events occurred ahead of the 2022 legislative session, prompting some members to question the current state of school health and safety.

In response, the Legislature appropriated funding in the ESSB 5693 operating budget<sup>1</sup> for the Washington State Department of Health to contract with the University of Washington Department of Environmental & Occupational Health Sciences to develop a report regarding school environmental health policies, recommendations, and standards.

## Project goals

The objectives of this report were to:

- Summarize the current literature and resources on PCB exposure standards and remediation levels for children and for school-specific facilities (e.g., buildings and grounds).
- Characterize the oversight activities of Washington's Local health jurisdictions regarding environmental health and safety in K–12 schools.
- Conduct a content analysis of K–12 school-specific environmental health and safety policies and regulations in other states with similar public health oversight responsibilities, including summarizing inspections, management, control, and remediation requirements related to PCBs, lead, asbestos, poor ventilation, and mold.
- Compare Washington K–12 school-specific environmental health and safety standards and activities to other states' standards and activities.
- Recommend policy options and next steps.

## Methods

This study used a mixed-methods approach to achieve the above research goals, including narrative literature review, semi-structured key informant interviews, directed content analysis, and an online survey collection tool.

## Findings

### PCB regulations, guidelines, and resources

- PCBs, widely used in building materials manufactured between 1950 and 1979, are regulated at the federal level by the US Environmental Protection Agency's (EPA) Toxic Substances Control Act (TSCA) (40 CFR Subchapter R), with the same rules for schools as for other building use types.

- Use of building materials (e.g., caulking, adhesives, paints, etc.) that contain PCBs at concentrations greater than or equal to 50 parts per million (ppm) is prohibited under TSCA; however, there is no requirement to test materials or their volatilization into air.
- Under TSCA, “totally enclosed uses,” including fluorescent light ballasts manufactured between 1950 and 1979 that commonly contain PCBs, are allowed, provided they are intact.
- A leaking ballast is considered a spill and should be addressed according to TSCA rules for cleanup; however, reporting of spills is only required under TSCA when a spill occurs in water or in vegetable gardens or if it exceeds 1 pound (per the Comprehensive Environmental Response, Compensation, and Liability Act). Light ballasts contain between 1 and 1.5 ounces of PCB liquid.
- The EPA has established guideline exposure levels for PCBs in school indoor air. These levels range between 100 and 600 nanograms per cubic meter, depending on the child’s age, and were developed to be equivalent to the EPA’s oral Reference Dose (RfD) of 20 nanograms per kilogram of body weight per day.
- The US Occupational Safety and Health Administration has also established exposure levels; however, these levels were developed in the 1940s, were intended to prevent only certain health effects, and are much higher than the guideline EPA school levels.
- While the number of fluorescent light ballasts replaced or remaining in schools is unknown, we know that approximately 1,681 Washington school buildings (29.5% of all public school-related buildings) were constructed or modernized prior to 1980 and, presumably, are more likely to include PCB-containing building materials, including light ballasts.
- When samples have been taken, PCBs have been found in pre-1980 buildings, including schools. It is therefore likely that PCBs are present in some Washington schools.

Additional information collected and summarized under this section includes numerous resources available to assist in identifying, sampling for, and remediating PCBs in building materials; clear roles and responsibilities related to PCBs in schools and resources to help school building owners and operators; and a summary of three other states that have supplemented TSCA’s rules with their own state regulations on PCBs in schools.

## Local health jurisdiction activity survey

- Of the 22 Local health jurisdictions (LHJs) in Washington that completed our survey (representing approximately 90% of public school children across the state), 32% reported they have an existing, routine school program, 32% reported having a program in development, and 36% reported having no program beyond plan reviews.
- For those with routine or developing programs, 17% reported annual routine inspections, 50% reported inspections every two to three years, and the remaining 33% reported inspections for complaints or as requested.
- Nearly 75% report following up with schools when hazards are found, with the remaining 25% not requiring follow-up for corrective actions.
- Chemical hazards in science labs and lighting issues were the two most frequently cited hazards identified in schools, followed by playground hazards, unsafe conditions, and heating, ventilation, and air conditioning (HVAC) or poor air quality issues.
- Only 25% of LHJs survey schools for chemical hazards such as PCBs, asbestos, lead-based paint, lead pipes, hazardous waste storage, or mercury-containing products. Three LHJs reported responding to reports of leaking or smoking PCB-containing light ballasts.

- The most common *complaints* received by LHJs include indoor air quality issues, food safety, mold and moisture issues, and general safety.
- The Washington State Department of Health's (DOH) School Program is the most cited resource for overall training and technical assistance. A DOH and Washington state Department of Ecology program called "Rehab the Lab," now more than 20 years old and no longer supported, is most frequently used for hazardous chemical-related assistance.
- Approximately half of LHJs with routine programs provide technical support to schools when environmental health and safety issues are discovered and where sampling or testing is required. Most issues are related to noise control, pest control, mold and moisture management, HVAC, and water contamination concerns (most of which are beyond existing WAC 246-366 rules or guidance documents).
- Adequate and flexible funding, updated and concise codes with a clear legislative mandate, training and technical support, and dedicated school environmental health and safety personnel were all cited as top barriers to and facilitators for program implementation.

## Content analysis of regulations

- Fifteen state regulations were identified for review, with all implemented or updated since 2002, except for Washington's enforceable WAC 246-366 (implemented in 1991). WAC 246-366A (updated and adopted in 2009) has been under an "implementation suspension" since 2009.
- Over 73% of state regulations require school inspections by a local health official. The frequency of these inspections ranged from twice per year (Kentucky) to once every three to five years, depending on the type of school (New Hampshire). Five state regulations require annual inspections. WAC 246-366 requires "periodic" inspections of each school.
- Of those states requiring inspections, over half stipulate that the health official should establish a specific and reasonable time period for corrective action if a violation is found and consequences for noncompliance. WAC 246-366 does not stipulate a corrective action timeline.
- About half of the regulations explicitly call out chemical management, including addressing asbestos, mercury, and radon. Four specify proper use, storage, and disposal of chemicals. Three require schools to develop a chemical hygiene plan. One requires schools to designate a chemical hygiene officer. Rhode Island is the only state found to address PCBs through their required chemical hygiene plan. WAC 246-366 does not explicitly address chemical management requirements or mention any particular chemical, such as PCBs, lead, asbestos, or mercury.
- All codes reviewed (except WAC 246-366) regulate lead levels in drinking water to some degree, with three requiring testing for lead in drinking water outlets at least every five years.
- Eleven of 15 regulations address ventilation, and six specifically require schools to have functioning ventilation systems. Montana is the only state to require the implementation of new air ventilation, cleaning, and filtration technologies. WAC 246-366 addresses ventilation in relation to odor, noise, and mechanical exhaust.
- Twelve of 15 regulations require specific activities related to the prevention of mold and moisture in school buildings. WAC 246-366 does not address mold.



# Recommendations

## PCB-related solution strategies

**Solution strategy 1: Assume PCBs are present in school buildings of a certain age and implement known efficacious interventions.**

- **Require removal of PCB light ballasts and/or documentation of their removal:** Removing PCB light ballasts is one of four actions the EPA recommends for schools and is relatively uncomplicated compared to other potential interventions.
- **Support cleaning and ventilation best management practices:** Establish and fund required cleaning, ventilation, and filtration practices that are known to be effective in reducing PCB exposure as well as having co-health benefits that positively affect children's health and school performance.
- **Support schools with expertise, information, and outreach opportunities:** The state could engage in capacity-building to ensure school operators are aware of their responsibilities related to PCBs and make expertise available to schools investigating or addressing PCBs in their buildings.
- **Require testing of building materials for PCBs prior to school construction projects:** Test for and remove PCB-containing building materials before starting school renovation or demolition work on buildings built before 1980.

**Solution strategy 2: Characterize and quantify PCB hazards in Washington schools, then implement interventions.**

- **Conduct a study to assess the presence and extent of PCB hazards in schools:** A study of sufficient power could be used to characterize PCB presence and potential exposures to occupants in Washington schools and guide future interventions.
- **Require inspection and testing for PCBs in schools:** Create a rule similar to Vermont's, requiring inspection and testing for all school buildings built or renovated within a certain time frame (e.g., prior to 1980).

## Local health jurisdiction oversight recommendations

**Eliminate implementation suspension proviso in 2023 supplemental state operating budget.**

Discontinue adopting an "implementation suspension" in the upcoming state operating budget and allow the "new" chapter 246-366A WAC *Environmental Health and Safety Standards for Primary and Secondary Schools*, to enter into force on August 1, 2023.

**Update WAC 246-366A using evidence-based science to identify priority hazards, effective control methods, and necessary training and technical assistance opportunities.** Update codes using an evidence-based approach to identify and prioritize existing and emerging hazards and associated best control practices to help focus both school district and LHJ limited resources. Further study is needed to elucidate priority hazards in Washington schools and identify appropriate efficacious controls.

**Update the *Health and Safety Guide for K-12 Schools in Washington* (2003).** Revise the guide to reflect the current evidence base for hazard identification and best practices for controlling hazards. The existing guide is nearly 20 years old and based predominately on content from the 30-year-old WAC 246-366. Our study found this guide remains one of the top resources currently used by LHJs.

**Invest in school health and safety at all levels, including the Department of Health School Program, educational service districts, local health jurisdictions, and school districts.** Funding and resources for building and maintaining environmental health and safety capacity across the system topped the list of concerns for LHJs seeking to develop programs, as well as those committed to sustaining their services. Federal, state, and local key informants all spoke of the need to fund remediation and control activities at the school level and to eliminate barriers that impede efficient interventions.

# Background

## K–12 school environmental health and safety in Washington

In the state of Washington, there are 322 school districts comprised of 2,370 public schools and an estimated 550 private schools serving children in kindergarten through grade 12. On average, Washington's 49 legislative districts represent approximately 10 school districts, with a range of one (Leg. District 36) to 54 (Leg. District 14). Within public school districts alone, there are approximately 5,704 buildings associated with school-related business.

Local health officers and their designees are responsible for the oversight of K–12 school health and safety in Washington. The existing regulatory tool used to guide inspections, plan reviews, and technical assistance is chapter 246-366 WAC *Primary and Secondary Schools*,<sup>2</sup> originally passed in 1971 and most recently updated in 1991. The tool is limited in scope and fails to address modern hazards and best practices to control these hazards.

In 2009, the Washington State Board of Health adopted chapter 246-366A WAC *Environmental Health and Safety Standards for Primary and Secondary Schools*<sup>3</sup> to update the regulatory guidance to address hazards of concern not addressed in WAC 246-366. However, prior to implementation, the Washington State Legislature adopted a proviso in the state supplemental operating budget (ESHB 1244) “prohibiting implementation until the legislature acts to formally fund implementation.”<sup>4</sup> This budget proviso has been continued in each subsequent supplemental operating budget including the most recent, ESSB 5693, effective through June 2023.<sup>1,5</sup>

## Polychlorinated biphenyls (PCBs) primer

### Introduction

Polychlorinated biphenyls (PCBs) are a class of synthetic chemicals of 209 possible configurations or congeners. Their chemical stability, low flammability, low heat capacity, and low electrical conductivity made them excellent materials for use as coolants, lubricants, plasticizers, and fire retardants in industrial and commercial products. These include transformers, capacitors, and other electrical equipment; oils used in motors; fluorescent light ballasts; insulation materials; adhesives; caulk; oil-based paint; plastics; and carbonless copy paper, among many other uses.<sup>6–8</sup> The US produced commercial PCB mixtures, known by the trade name Aroclor, between 1957 and 1971. Commercial PCBs were synthesized through batch chlorination of biphenyl with chlorine gas, resulting in the production of complex mixtures of PCBs.<sup>7</sup> Thus, Aroclors are mixtures of congeners of varying chlorine weights by percent.<sup>6,9</sup> PCBs were manufactured in the US from 1929 until 1979, when production was banned by the Toxic Substances Control Act (TSCA) under the US Environmental Protection Agency (EPA) (15 U.S.C. §2601 et seq. 1976) and codified in the Code of Federal Regulations (40 CFR § 761). PCBs' classification as persistent organic pollutants (POPs) with global and ecological consequences as well as increasing findings of toxic health effects on people led to decreased manufacturing of PCBs in the early 1970s and eventual ban under TSCA.<sup>7,10</sup>

# Physical and chemical properties and environmental fate

PCB congeners are biphenyls with chlorine at 209 possible permutations of aromatic ring positions (Figure 1)<sup>11</sup>. Although the 209 congeners have some features in common, their properties vary greatly depending on structural characteristics such as the number of chlorine atoms and the position of the atoms (co-planarity and chirality).<sup>12-15</sup> At room temperature, PCBs are either oily liquids or waxy solids, with differences in volatility depending on the type of congener.<sup>6,16</sup> PCB congeners that are more highly chlorinated are less volatile and are more likely to bioaccumulate, while lower-chlorinated PCBs tend to be more volatile and are more likely to be metabolized, leading to less bioaccumulation.<sup>6,17</sup> Bioaccumulation refers to the accumulation of toxicants in an organism through direct exposure, including through consumption of contaminated food.<sup>18</sup>

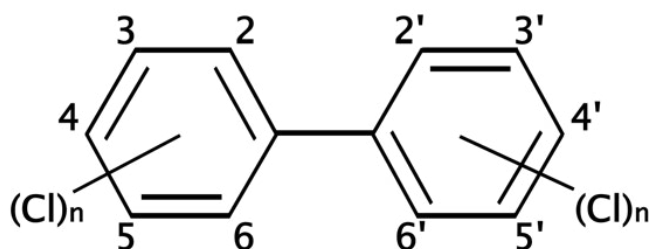
PCBs are generally highly resistant to chemical and environmental degradation and tend to accumulate in lipids (fats), thus raising grave concerns regarding biomagnification.<sup>6,12,19</sup> Biomagnification refers to the transfer of toxicants through the food web, with predators accumulating higher concentrations of the chemical than their prey.<sup>18</sup> PCBs are primarily transformed through microbial degradation in environmental media like sediment and metabolism through organisms, resulting in discrepancies between composition of PCB congener mixtures in the environment and original industrial mixtures released into the environment.<sup>12,20,21</sup> Congeners that are highly chlorinated (8-9 chlorines) remain close to the source of contamination.<sup>22</sup> Congeners that are less chlorinated are more volatile and undergo frequent volatilization and deposition cycles, allowing transportation and circulation, even globally. Semi-volatile PCBs are present in air as gas and adsorbed to dust particles.<sup>22-24</sup>

## Physiological impacts on organisms

The bioavailability and the rates of absorption, distribution, biotransformation (metabolism), and excretion of PCBs are highly dependent on their molecular structure, specifically the number and positions of chlorines.<sup>13,25</sup>

In general, all PCBs are readily absorbed into blood due to their lipophilic properties and distributed to target organs (mainly adipose tissue but also liver, skin, breast milk, and brain).<sup>25,26</sup> Oral absorption of PCBs is highly efficient, with some estimates ranging from 60% to 100%, reaching maximum PCB concentration in blood within 3 to 4 hours after oral administration in rats.<sup>14,27</sup> A minimum of 80% of PCB levels observed in adipose tissue of exposed capacitor workers may have been absorbed via inhalation;<sup>28</sup> a series of nose-only inhalation studies in rats demonstrated that PCBs are absorbed in the lung and distributed systematically in rats,<sup>29,30</sup> with uptake of PCB-11 at 99.8% of inhaled, radio-labeled PCB-11.<sup>31</sup> Dermal absorption rates are both lower and less rapid compared to oral absorption and inhalation, with retention of higher chlorinated (more lipophilic) PCB congeners in fat in the skin.<sup>32,33</sup> It should be noted that while lipophilic PCBs are sequestered in fat-rich tissue, they cannot interact with more sensitive organs. However, they are slowly released into the bloodstream, with significant releases during lipolysis events, increasing the total body burden.<sup>34</sup> In terms of PCB biotransformation, lower chlorinated congeners tend to be more rapidly metabolized compared to higher chlorinated congeners, which are more likely to be retained in adipose tissue.<sup>13</sup> The major routes of excretion of PCBs are fecal and urine, with metabolites primarily excreted through urine. Excretion rates depend on lipophilicity and the extent of metabolism.

Figure 1: Polychlorinated biphenyl structure<sup>11</sup>



Toxicological mechanisms of PCBs are highly dependent on structure.<sup>35,36</sup> Co-planar PCBs have chemical structures and binding activity similar to dioxins. Co-planar PCBs bind to aryl hydrocarbon receptors (AhR) in the cytosol of target cells. This binding causes the ligandreceptor complex to be transported to the nucleus, causing deregulation of normal physiologic function and leading to toxic responses.<sup>37</sup> Many current risk assessments of PCBs use toxicity equivalence factors based on AhR-dependent mechanisms for 12 PCB congeners to assign toxicity weights to each PCB congener by its similarity to 2,3,7,8-tetrachlorodibenzodioxin (TCDD).<sup>38,39</sup>

## Health effects

PCBs have been documented to have adverse health effects in both humans and animals in the nervous, immune, reproductive, and endocrine systems.<sup>6,11,16,17,40</sup> Furthermore, PCBs are classified as carcinogenic to humans (Group 1) by the International Agency for Research on Cancer.<sup>41</sup> Additionally, there is increasing evidence that various classes of PCB metabolites can also have toxicities, including carcinogenic, neurologic, and endocrine effects.<sup>9,42,43</sup> Available information about the health effects of PCBs largely comes from studies looking at oral exposures, occupational health studies with relatively high exposures, and animal studies.<sup>6,11,17</sup> Data is extremely limited for the human exposure response relationship for inhaled PCBs, particularly at lower concentrations. As a result, there is very little information on human health effects related to inhaled PCB exposures likely to be encountered by the general public, such as exposures related to time spent in buildings with PCBs.<sup>20,44</sup> A non-exhaustive list of health effects related to PCBs can be seen in Table 1.

The significant variability in structure and properties among PCBs results in different implications for exposure and potential health effects. Historically, there has been more focus on higher chlorinated PCB congeners in relation to health effects as they are more likely to bioaccumulate, stay in the body for longer, and tend to be found in higher concentrations in human serum samples as compared to the lower-chlorinated congeners.<sup>6,17,45</sup> Newer studies, however, have indicated an emerging concern for health effects related to the more volatile lower chlorinated PCB congeners. One study found associations between these types of PCBs and increased risk of cancer in an occupational exposure case study and cardiovascular disease, hypertension, and diabetes in residents living near hazardous waste sites.<sup>11</sup> Others have found toxicological evidence for potential thyroid effects, endocrine disruption, and neurodevelopmental impacts.<sup>46-48</sup> One study in animals found lower-chlorinated PCBs to be more neurotoxic than higher-chlorinated PCBs.<sup>49</sup> These findings indicate that there may be different health implications for inhalation exposures to the more volatile PCBs compared to the types of PCBs found in other exposure sources, such as diet.<sup>11</sup> This may be particularly important for situations where people spend considerable amounts of time in buildings where PCB materials are present and are potentially continuously exposed to airborne PCBs in these spaces.<sup>11,45</sup>

Table 1: Summary of human health effects associated with PCBs	
•	Cancers: malignant melanoma, liver cancer, and others <sup>11,16,17,41</sup>
•	Developmental neurotoxicity <sup>16,40</sup>
•	Deficits in learning and memory <sup>11,40</sup>
•	Immune system suppression <sup>6,17</sup>
•	Increased respiratory infections in children
•	Increased asthma cases
•	Endocrine disruption <sup>6,16,17</sup>
•	Earlier puberty in girls
•	Reduced testosterone in men and boys
•	Thyroid function suppression <sup>6,16,17</sup>
•	Lower birth weight of infants <sup>6,17</sup>
•	Cardiovascular disease <sup>6,11,17</sup>
•	Hypertension <sup>6,11,17</sup>
•	Diabetes <sup>6,11,17</sup>
•	Skin irritation <sup>6,16</sup>

Children are an important population to consider when discussing PCB exposures and health effects. Children are still developing and may be more susceptible to toxic chemicals. In addition to immature metabolism and excretion systems, fat mass tends to decline during childhood, resulting in lower capacity for PCB sequestration in fat-rich tissue. They have more time in their lives for health effects from PCBs to develop, and they are potentially exposed to higher amounts of PCBs relative to adults due to higher rates of breathing and ingestion in proportion to body weight and to increased incidental hand-to-mouth ingestion of PCBs from dusts and surfaces.<sup>50-53</sup> Of particular concern is the association of PCB exposure in children and neurodevelopmental effects.<sup>54</sup>

## Sources of and exposure to PCBs

### PCB sources

While TSCA halted most new PCB production in 1979, legacy PCBs remain prevalent. For the general population, the most common sources of exposure to legacy PCBs include the food supply and airborne PCBs from buildings with PCB-containing materials.<sup>6,45,51</sup> A more detailed discussion of PCBs in building materials can be seen in Box 1. Other legacy sources include contaminated soil, water, and air near hazardous waste sites. The Agency for Toxic Substances and Disease Registry notes that low concentrations of PCBs have been seen in “almost all” air, soil, sediment, surface water, and animal samples.<sup>6</sup> In addition to legacy exposure sources, PCBs can be found as byproducts in pigmented consumer products such as household paint and can volatilize from these sources or can be inadvertently generated from manufacturing processes.<sup>55-58</sup> These PCB sources are allowable up to 50 ppm in TSCA’s excluded manufacturing processes section ([40 CFR §761.3](#)). All PCBs found in the environment are due to human activity as there are no known natural sources of PCBs.<sup>6</sup>

### PCB exposures

People can be exposed to PCBs through inhalation, oral, and dermal routes of exposure<sup>6</sup> (Figure 2). PCBs can be inhaled as vapors that have volatilized from PCB liquids or materials, or via dust particles to which PCB vapors have adsorbed.<sup>6,59</sup> Ingestion of PCBs occurs via contaminated food such as meat, fish, and poultry; ingestion of contaminated water or breast milk; or hand-to-mouth ingestion of PCB-contaminated dusts and soils.<sup>6,50</sup> Dermal exposure and absorption can occur through skin contact with PCB liquids or PCB-contaminated soil or water.<sup>6</sup>

The contribution of each exposure route to total PCB exposures is not well understood due to the diversity of PCB chemical properties, the concurrence of multiple PCB congeners in mixtures, and limited exposure data.<sup>44</sup> Ingestion of contaminated food has historically been considered the primary exposure route.<sup>6,51</sup> However, recent studies have suggested that inhalation may be a more significant route of PCB exposure than previously believed, particularly for children, though exposures have not been measured, only estimated.

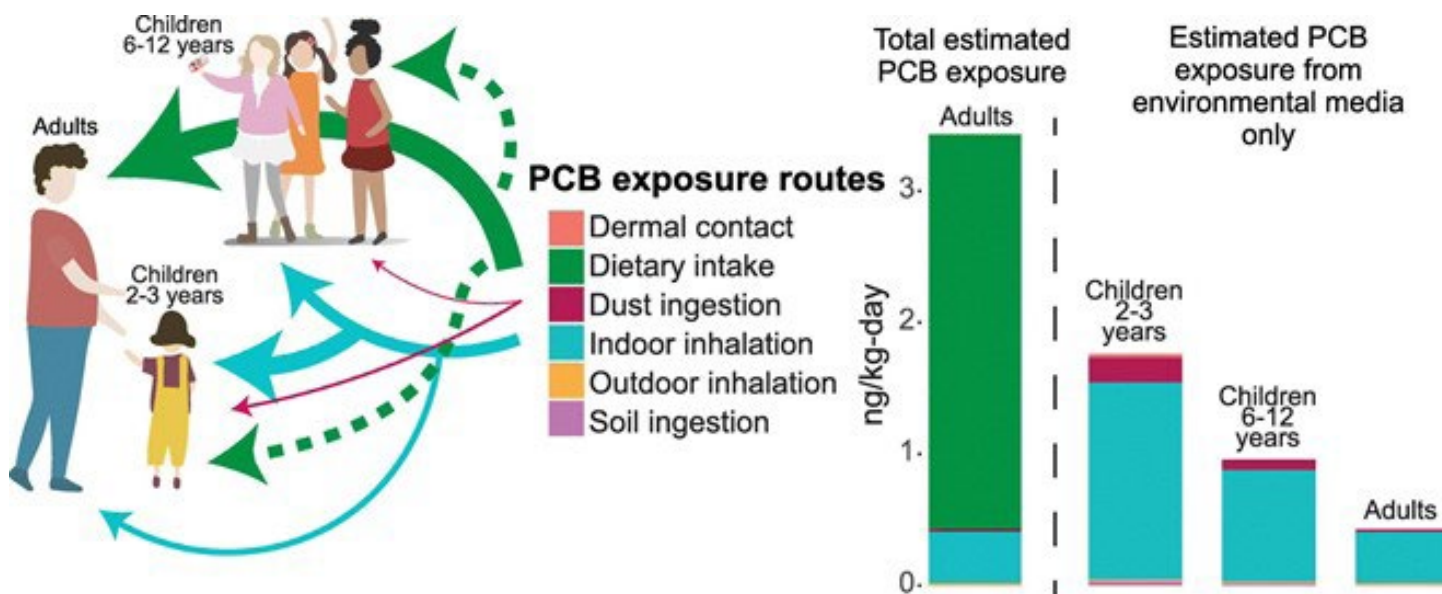
A recent review<sup>51</sup> estimated that dietary intake was the major exposure route for adults, comprising 88% of exposure, followed by indoor air inhalation at 11%, with other routes of exposure being negligible. Due to lack of recent data for dietary PCB exposure for children, this study was only able to make exposure contribution estimates for non-food sources. Inhalation of indoor air was by far the biggest contributor to PCB exposure in children of the environmental media sources. Indoor air inhalation exposure to PCBs was estimated to be nearly four times the rate of adults in 2- to 3-year-olds and two times the rate of adults in 6- to 12-year-olds. This was believed to be due to differences in physiologic and exposure parameters such as body weight in relation to breathing rate and time spent indoors. This study only included data from schools



built after 1979 when use of PCB-containing materials was banned, so indoor air inhalation exposures may be underestimated for certain populations.

In another study<sup>44</sup>, “inhalation of indoor air was estimated to account for 60.8%, 50.5%, and 34.6% of total exposure, whereas diet accounted for 28.9%, 42.7%, and 62.8% of total exposure for children ages 2 to 3 years, children ages 6 to 12 years, and adults, respectively.” This study also points out that absolute and relative indoor air inhalation exposures would be expected to be higher for those spending time in PCB-contaminated buildings. As the Western States Pediatric Environmental Health Specialty Unit concludes, children going to school in buildings with PCB materials may be exposed to more PCBs via inhalation than from their diet.<sup>50</sup>

**Figure 2: Estimated contributions of various PCB exposure routes by age (Source: Weitekamp et al. 2021)<sup>51</sup>**



## PCBs in buildings

As one purpose of this report is to better understand PCB hazards, regulations, and best practices in schools, it is helpful to consider PCB sources and exposures as related to buildings in particular. Between 1950 and 1980, PCBs were widely used in a variety of building materials and in fluorescent light ballasts, which are the part of a fixture that regulates the electrical current.<sup>60,61</sup> Details on PCBs in building materials can be seen in Box 1 and in light ballasts in Box 2. Buildings that were built or renovated in that time frame are likely to have PCBs if they have not had more recent renovation or replacement of PCB-containing materials or equipment.

EPA laboratory research and studies performing air sampling in buildings confirm that PCBs can be emitted from building materials, even decades later.<sup>59,62-64</sup> Studies have also found that intact PCB light ballasts can also emit PCBs.<sup>59</sup> Much like PCB content in building materials, PCB concentrations in indoor air vary widely.<sup>62,65,66</sup> Indoor air PCB concentration will depend on the number, types, and conditions of PCB sources; types and concentrations of PCB congeners in building materials and other sources; type and frequency of cleaning practices; and ventilation and filtration conditions in an indoor area.

## Building materials

PCBs were widely used in building materials for their flexibility, durability, adherence, and flame-retardant properties.<sup>67</sup> A list of common PCB-containing materials can be seen in Table 2 as well as Figure 3. PCBs have been shown to migrate from building materials into adjoining substrates such as brick or concrete, which are sometimes referred to as secondary sources.<sup>61,67,68</sup> The EPA's "PCBs in Building Materials" fact sheet also states that even after PCB-containing building materials such as caulk have been removed, PCBs can be released from the contaminated substrate into the air or into the PCB-free replacement caulk.<sup>61</sup> One 2016 review<sup>69</sup> summarized data from 25 studies of PCB concentrations in various PCB building materials and secondary sources, with maximum PCB concentrations shown in Table 3. Studies have shown PCB content to vary among materials, finding wide ranges of concentrations even for the same type of material.<sup>62,65,69</sup>

**Table 2: Common manufactured products that may contain PCBs found in buildings (from EPA Fact Sheet: PCBs in Building Materials)<sup>61</sup>**

- Paint, varnishes, and lacquers
- Non-conducting materials in electrical cables (e.g., plastic and rubber)
- Rubber and felt gaskets
- Coal-tar enamel coatings (e.g., pipe coating) and rust inhibitor coatings
- Insulation materials (e.g., fiberglass, felt, foam, and cork)
- Adhesives and tapes
- Caulk, grout, and joint material (e.g., putty, silicon, and bitumen)
- Pipe hangers
- Plastic applications, including vinyl and PVC
- Galbestos (asbestos-coated metal sheeting)
- Mastics
- Acoustic ceiling and floor tiles
- Asphalt roofing and tar paper
- Synthetic resins and floor varnish
- Sprayed-on fireproofing

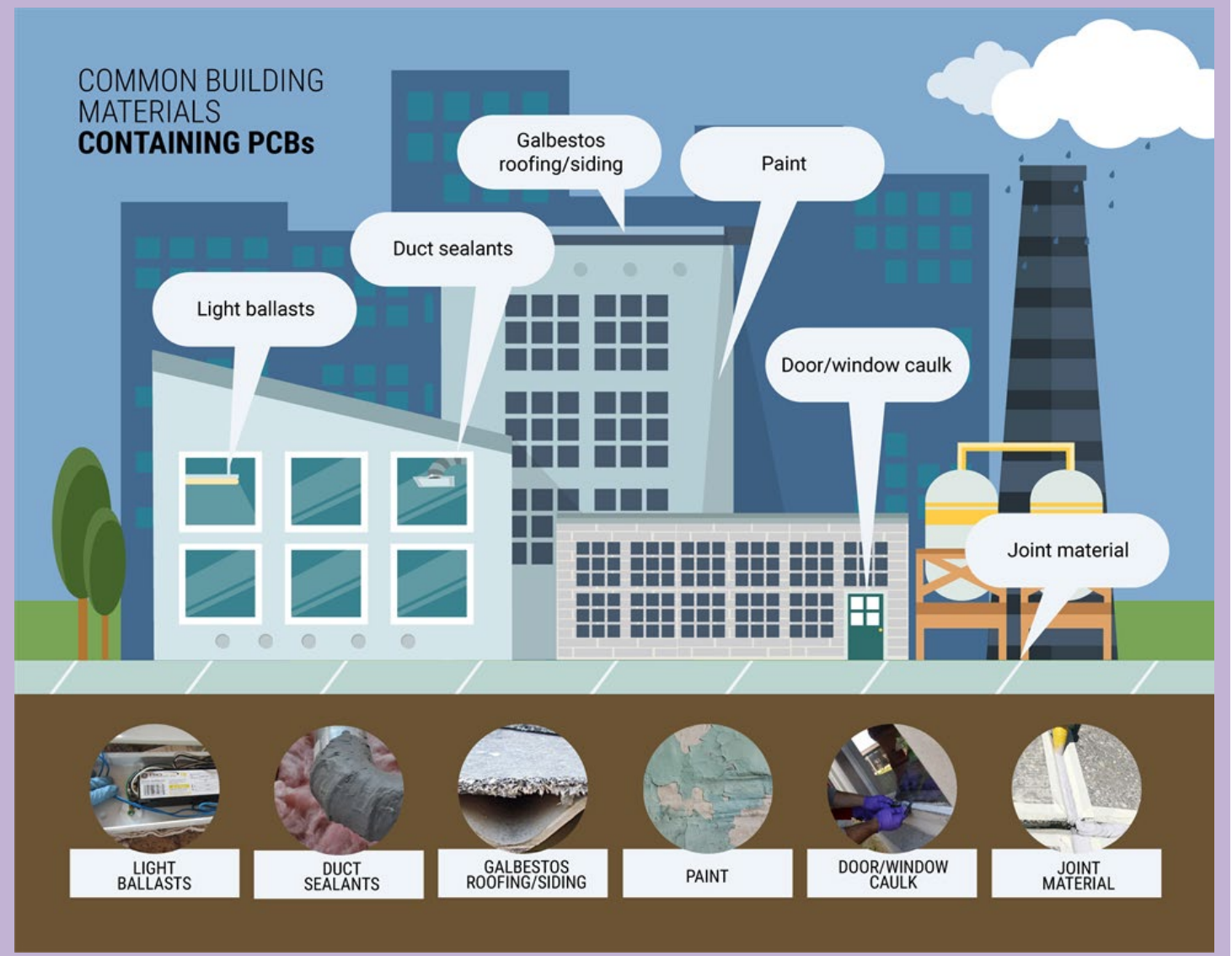
**Table 3: Maximum PCB concentrations found in building materials from various studies<sup>a 69</sup>**

Material	Maximum concentration
<b>Primary sources</b>	
Caulking	959–752,000 ppm
Adhesives/mastic	3.9–3,100 ppm
Surface coating	140–255 ppm
Paint	0.7–89,000 ppm
Ceiling tiles	57–51,000 ppm
Light ballast	Up to 100% liquid PCB
<b>Secondary sources</b>	
Insulation materials	0.2–310 ppm
Backer rod	99,000 ppm
Gaskets	4,300 ppm
Polyurethane foam (furniture)	47–50 ppm
Wood	380 ppm
Brick/mortar/cinder block	2.8–1,100 ppm
Concrete	53–17,000 ppm
<b>Non-porous materials</b>	
Metal surfaces	48 µg/100 cm <sup>2</sup>
Door frame	102 ppm
Railing	70 ppm

<sup>a</sup>: PCB content varied widely, ranging from non-detectable up to the concentrations seen above.

## Box 1 (Continued)

Figure 3: Common building materials containing PCBs (Source: Washington State Department of Ecology)<sup>70</sup>



## Light ballasts

PCBs were historically used in fluorescent light ballasts because of their insulation and lubricant properties and because they tolerate high levels of heat<sup>71</sup> (Figure 4). PCBs can be found in capacitors (which regulate electrical current and voltage) as a “yellow, oily liquid” or in potting material (which encapsulates and insulates the capacitor) as “a black, tar-like substance.”<sup>71</sup> Capacitors were composed of approximately 50% PCBs prior to the TCSA ban, with some light ballast capacitors containing pure liquid PCBs.<sup>60</sup> The types of fixtures that had PCB-containing capacitors and potting materials were magnetic T12 ballasts with an average lifespan of 10 to 15 years under normal use conditions, or longer if used less frequently, which may be the case in some school settings.<sup>60,72</sup> PCB light ballasts are more likely to leak or rupture if they are used beyond their intended life span.<sup>72</sup> More modern electronic ballasts do not have PCBs, have longer average lifespans, and are more energy efficient.<sup>72</sup>

PCB exposures are most likely to occur if a ballast is leaking, smoking, or has ruptured.<sup>72</sup> Exposure might also occur if there is residue remaining on light fixtures or other materials even after a PCB light ballast has been removed.<sup>62,72</sup> A light ballast leak or rupture is usually an acute exposure event, whereas PCB residues left behind have the potential for chronic exposures if not addressed. PCBs may also be released from intact light ballasts, as confirmed by EPA laboratory studies.<sup>59</sup> One study of New York schools built between 1950 to 1979 measured PCBs in classrooms with 3 to 9 intact PCB light ballasts and found air concentrations ranging between 690 to 1,460 ng/m<sup>3</sup>, though PCB-containing building materials may also have contributed to these measurements.<sup>62</sup>

Figure 4: Example of a typical PCB light ballast (Source: EPA)<sup>60</sup>





# Methods

This study used a mixed-methods approach, including a narrative literature review, semistructured key informant interviews, directed content analysis, and online survey data collection. Specific methods used for each study objective are outlined below.

## PCB literature review

The purpose of the narrative literature review was to serve as a resource for recommendations and best practices pertaining to PCB exposure standards and remediation levels for children and school-specific facilities (e.g., buildings and grounds).

Peer-reviewed journal articles, documents and webpages from government and other institutions, and relevant state and federal regulations were identified using a risk-based framework: Hazard identification, Dose-Response, Exposure, Characterization, and finally Control/Management. Sources used to search relevant materials included the PubMed database and general Google and Google Scholar search engines. Information was then synthesized and reported under two thematic categories:

- **PCB primer:** Presented in the background section of this report and intended to serve as a general overview of information regarding PCB production and use, chemical and toxicological properties of PCBs, health effects of PCBs, and PCB exposure/hazard characterization.
- **PCB regulations, guidelines, and resources:** Presented in the findings section of this report and intended as a deeper dive into PCB regulations at the state and federal levels, and practices and resources for characterizing and managing PCB hazards in buildings and schools.

Additionally, a review of state government webpages was conducted to summarize the resources available to the public on PCBs in schools. Searches were conducted using general search engines, as well as the search functions provided on the specific sites. Search topics included general PCB information, PCBs in schools, PCBs in building materials, and PCBs in light ballasts. Government agencies included in the search were the Washington State Department of Health (DOH) and Washington State Department of Ecology (Ecology), EPA's Region 10 PCB Program, each of the 35 Local health jurisdictions, the Office of Superintendent of Public Instruction (OSPI), and each of the Educational Service Districts (ESDs).

## Local health jurisdiction activity survey

The purpose of this study's survey was to collect and summarize current school environmental health and safety (EH&S) program activities undertaken by Washington state's Local health jurisdictions (LHJs) and to identify the barriers, facilitating factors, and needs of LHJs for implementing and maintaining successful EH&S programs.

We used a purposive sample approach and invited the school EH&S lead in each of the state's 35 LHJs to complete a web-based survey tool. In cases where no school EH&S lead existed, the jurisdiction's environmental health director was invited to complete the survey.

Contact information was provided by the DOH School Environmental Health & Safety Program Manager. A survey link with an explanation was emailed, along with weekly reminders for one month.



The survey tool was created and distributed via REDCap and featured questions informed by existing state regulations and state and federal guidelines, as well as a previous baseline DOH questionnaire. The following resources provided the basis for activity-based questions:

1. Washington State codes: chapter 246-366 WAC *Primary and Secondary Schools*<sup>2</sup> and Chapter 246-366A WAC *Environmental Health and Safety Standards for Primary and Secondary Schools*<sup>3</sup> (not implemented due to budget proviso).
2. State guidelines: The *Health and Safety Guide for K-12 Schools in Washington* (2003) (*Health & Safety Guide*), DOH and OSPI, developed specifically to guide school health programs per WAC 246-366-140.<sup>73</sup>
3. Local health jurisdiction *School Environmental Health Program Survey*, DOH (2004).<sup>74</sup>
4. Federal guidelines: EPA *Model K-12 School Environmental Health Program*, a comprehensive strategy for preventing and addressing environmental health issues in schools.<sup>75</sup>

Survey questions covered current school inspection activities, resources used by LHJs for developing programs and health recommendations, frequent violations and corrective action taken by LHJs, capacity for LHJs to offer support to schools, needs and barriers of school programs, and specific chemical hazard activities. The survey varied in length based on whether the LHJ self-selected as having a school program. LHJs that selected no school program did not answer questions specific to those having implemented a school program.

## Key informant interviews

The purpose of this study's key informant interviews was to provide additional background and resource information with respect to PCB-related regulations, remediation, and preventative program opportunities. Additionally, LHJ key informant interviews were conducted to provide additional depth and clarification regarding barriers and facilitators in school EH&S program implementation.

A semi-structured interview guide was developed in preparation for each interview and was used to guide the discussion. To identify key informants, we used purposive and snowball selection methods (where interviewees recommend additional key informants with expertise). Questions were created to facilitate conversation around PCB regulations and programs at the state and federal levels; other government efforts and initiatives to address PCBs in buildings and schools; PCB hazard control strategies; programs and resources available for schools to address PCBs; barriers for addressing PCB hazards in schools; and the scope of PCB hazards in Washington schools. LHJ key informants were asked about their school EH&S program, historical and present strengths of their program, barriers and facilitators to program implementation, recent emerging hazard management, and key recommendations necessary to ensure success.

Interviews were attended by at least two research team members, and notes were hand-recorded by each member. One team member combined all notes into a master interview document for each interview. Themes were co-identified by two to three team members. A single team member developed a summary of the key themes and summarized by relevant content area.

# Content analysis

The purpose of this study's content analysis was to:

1. Identify K–12 school-specific EH&S policies and regulations in other states;
2. Conduct a qualitative content analysis of said policies and regulations;
3. Summarize those regulations, including inspections, management, control, remediation requirements, and content specific to PCBs, lead, asbestos, poor ventilation, and mold;
4. Develop recommendations to inform revisions of Washington's EH&S guidelines and regulations.

A directed approach was used to both quantitatively and qualitatively analyze content. The directed approach, identified by authors Hsieh and Shannon, leverages an existing framework to develop content analysis codes deductively.<sup>76</sup> The *EPA Model K–12 School Environmental Health Program*, published in 2012, was identified as the most suitable framework with which to compare K–12 state school environmental health policies and regulations.<sup>75</sup> The *EPA Model Program* (Box 3) is divided into four sections, two of which informed the development of the content analysis codes: the *Five Key Components of a School Environmental Health Program* and *Additional Opportunities for Promoting Environmental Health in School Facilities*.

Two team members searched each of 50 states for relevant K–12 EH&S regulations. The following search terms were used to identify potential state regulations for review:

- “[name of state] K–12 school environmental health regulations”
- “[name of state] K–12 school environmental health rules”
- “[name of state] K–12 school health and safety regulations”
- “[name of state] K–12 school health and safety rules”
- “[name of state] primary and secondary school health and safety regulations”
- “[name of state] primary and secondary school health and safety rules”

Two online resources were also used to identify potential regulations: 1) the *Environmental Law Institute's Topics in School Environmental Health: Overview of State Laws*, and 2) the *National Association of State Boards of Education's State Policy Database*.

Regulations were included for review based on the following criteria:

- *Inclusion criteria*: Policy must be a comprehensive regulation specific to schools overseen by a health agency or requiring inspection by a health official.
- *Exclusion criteria*: Policy is not a regulation, not specific to schools, and/or not comprehensive (e.g., only addresses one environmental health issue). Policy is not overseen by health agency or does not require inspection by health official.

A REDCap survey was developed using the *EPA Model Program* for reviewers to capture data elements about each state regulation. Activities from the model program were selected for survey inclusion based on feasibility (e.g., “Is this activity feasible for most schools in a state?”); applicability (e.g., “Is this activity applicable to most schools in a state?”); and/or defined frequency. The protocol was designed such that each survey “entry” represented one regulation. To ensure reliability of the data collection protocol, the six team members participating in the review process co-coded the same regulation independently and then convened to adjudicate any discrepancies and refine the data collection survey tool to ensure clarity.

Two team members independently assessed each regulation. Results were combined into a single spreadsheet where they were reviewed by a third team member. Where there were discrepancies, the team members reassessed the regulation in question and made necessary adjustments.

## EPA Model K-12 School Environmental Health Program

The EPA published the *Model K-12 School Environmental Health Program (EPA Model Program)* in 2012 as an appendix to the Voluntary Guidelines for States: Development and Implementation of a School Environmental Health Program.<sup>75</sup> The *EPA Model Program* provides guidance to schools and school districts interested in developing or strengthening school EH&S programs, including key steps for implementing a program and practical actions schools can take to address a wide range of environmental health issues.

The *EPA Model Program* is intended for use by state agencies, Local health jurisdictions, and school districts as a science-based approach and provides a thorough overview of the activities necessary to maintain healthy school environments. The model program describes how its guidance can be used by policymakers: “States are also encouraged to use the model program as a resource for considering new regulations, policies and guidance that might be helpful in promoting healthy school environments”.<sup>75</sup>

The *EPA Model Program* groups environmental health issues into five broad categories or key components. Within these categories, the program groups recommendations into a three-tiered structure from basic to more comprehensive so that all schools, even those with minimal resources to address environmental health, may use the document. The five key components are:

1. Practice effective cleaning and maintenance.
2. Prevent mold and moisture.
3. Reduce chemical and environmental contaminant hazards.
4. Ensure good ventilation.
5. Prevent pests and reduce pesticide exposure.<sup>75</sup>

The *EPA Model Program* has limitations. It was published 10 years ago and, as such, it fails to address emerging hazards such as new families of chemicals, innovative curricula, and climate-related hazards. The program also does not address certain existing hazards present on school campuses, namely playground equipment.

Despite its limitations, it remains the most comprehensive and widely applicable framework for school EH&S across the nation. The findings from our LHJ survey allowed us to contextualize the model program with a local lens, developing a more complete image of what school EH&S could look like in Washington.

# Results

## PCB literature review and key informant interviews

The review of PCB regulations, guidelines, and resources included 17 peer-reviewed journal articles, six of which were review articles; nine reports and guides from various public health-focused organizations, consultants, and a US senator; 20 EPA documents, reports, and guides, and 15 webpages; six Ecology reports, guides, and associated websites; the federal TSCA code pertaining to PCBs; the Washington Administrative Code for the Model Toxics Control Act (MTCA); federal Occupational Safety and Health Administration (OSHA) regulations; and state Division of Occupational Safety and Health (DOSH) regulations. Summary lists of PCB resources can be found in Appendix B.

In total, we conducted nine key informant interviews with 13 individuals or teams from various state and national organizations. The interviewees represented the DOH School Environmental Health and Environmental Toxicology programs; the Ecology Toxics Reductions and Product Replacement Programs; OSPI; the University of Washington Environmental Health and Safety Environmental Programs; the EPA's Region 10 PCB Program; the Snohomish Health District; and the Vermont Departments of Health and Environmental Conservation.

We have synthesized both the literature and key informant interview information into two categories:

- PCB regulations, guidelines, and resources, providing a comprehensive summary of federal and state regulations pertaining to PCBs in school buildings and grounds, as well as numerous guidance documents and federal and state governmental resources available to any school or district with questions about testing, remediation, or preventative control measures.
- Scope of potential PCB hazards in Washington schools, summarizing what is known and unknown about PCBs in the state's schools.

## PCB regulations, guidelines, and resources

### Federal environmental regulations

PCBs are regulated at the federal level by the EPA's TSCA regulation. TSCA banned PCBs from most uses in 1979, though there are several exemptions and authorized uses. Part 761 of the TSCA regulation outlines rules for the manufacture, import, processing, and distribution of PCBs as well as storage or disposal of waste PCBs and PCB-containing items. This includes proper management of PCBs through prescribed or approved handling, marking, storage, and disposal methods, and clean-up of PCB spills.

From a regulatory perspective, schools are not unique in the TSCA PCBs rule. That is, the regulations around PCBs are the same for schools as they are for other types of buildings. See Table 5 for a summary of EPA requirements and recommendations regarding PCBs and Box 6 for a summary of roles and responsibilities related to PCBs in schools.

The following are key elements of the TSCA rule relevant to schools.

### **PCBs in building materials**

Use of building materials that contain PCBs at concentrations greater than or equal to 50 ppm is prohibited under TSCA (40 CFR 761.20(a)). However, there is no requirement to test building materials for PCBs. As such, in older buildings, materials may be in use that predate the ban on PCBs at unknown levels, including levels exceeding 50 ppm. If building materials are tested and found to have concentrations greater than or equal to 50 ppm, they must be removed and properly disposed of ([40 CFR 761.50\(b\)](#)). See Box 7, *Mitigation of PCBs in building materials*, for information on mitigation strategies.

### **PCBs in fluorescent light ballasts**

TSCA allows for “totally enclosed uses” of PCBs, which includes capacitors such as those found in fluorescent light ballasts manufactured between 1950 and 1979 ([40 CFR §761.20](#)). This means schools can legally continue using these types of fixtures as long as they are not leaking. If a PCB-containing light ballast leaks or ruptures, that ballast can no longer be used according to TSCA regulation ([40 CFR 761.20\(a\)](#)). In addition, a leaking ballast would be considered a spill and should be addressed according to TSCA rules for cleanup.

### **Sampling for PCBs**

TSCA requirements for PCB sampling are primarily related to disposal, decontamination, and spill cleanup rule elements. PCB concentrations must be established for PCB-containing materials for proper disposal. The rule also requires sampling and outlines maximum concentrations of PCBs in soil, water, and on surfaces after decontamination or spill cleanup ([40 CFR 761.130](#)). TSCA does not require sampling for PCBs in air before or after remediation, decontamination, or spill cleanup, and has not established any regulatory limits for airborne PCB exposure.

### **PCB waste management**

TSCA outlines specific storage, transportation, and disposal requirements for PCB-containing items depending on the type of item and PCB concentration. TSCA prescribes certain conditions and time limits for storing PCB-containing materials and requires notification of storage in some situations ([40 CFR 761.65](#)). For disposal, TSCA has separate rules for PCB bulk product waste such as caulk and other building materials that contained PCBs originally and some PCB light ballasts ([40 CFR 761.62](#)), and for PCB remediation waste such as building materials or soil contaminated by PCB sources ([40 CFR 761.61](#)). Rules are more extensive for PCB remediation waste and include requirements for site cleanup and notification and approval from the EPA in many instances. See Box 4, *Environmental contamination from PCBs in school building materials*, for more information about how remediation waste requirements may apply to schools with contaminated soil. There are significant recordkeeping requirements for PCB waste disposal ([40 CFR 761.202-219](#)).

### **PCB spills**

Spill response and cleanup requirements are determined by the concentration of PCBs in the materials spilled and the type of space in which the spill occurred. The PCB Spill Cleanup Policy outlines time frames for spill response, reporting requirements, spill area restrictions, cleanup methods and requirements, and recordkeeping rules ([40 CFR 761.120135](#)). Reporting of PCB spills under TSCA is only required in certain circumstances, such as spills to water or in vegetable gardens ([40 CFR 761.1230\(d\)](#)), and is only required under the Comprehensive Environmental



## Environmental contamination from PCBs in school building materials

Soil and surfaces such as concrete and asphalt at the base of buildings can be contaminated with PCBs either through direct migration of PCBs from adjoining building materials, or by being transported from building materials onto the ground by water such as with rain or during cleaning.<sup>61,62,67,69</sup> In an EPA study in New York schools built between 1950 and 1980, PCBs were found above detection limits in the soil in all six schools where measurements were taken.<sup>62</sup> For all the samples, the 75<sup>th</sup> percentile concentration was 0.98 ppm, with a range up to 211 ppm and wide variability between schools. PCBs were detected at least 8 feet away or more from the building in five of the six schools, with levels higher than 1 ppm at three of these schools.

Soil containing more than 1 ppm of PCBs is considered remediation waste under TSCA, and is thus subject to the cleanup and disposal requirements for remediation waste ([40 CFR 761.61](#)). TSCA outlines three options for PCB-contaminated sites, with most situations requiring notification and approval from the EPA before initiating cleanup. The commonly used “self-implementing” option involves site characterization, EPA notification and certification, soil cleanup to 1 ppm for high-occupancy areas such as schools, cleanup verification through sampling of soil and porous and non-porous surfaces, and recordkeeping ([40 CFR 761.61\(a\)](#)).

Oversight of cleanup under Washington’s Model Toxics Control Act (MTCA) may also be required on a case-by-case basis depending on the PCB and PCB concentrations.<sup>67,77</sup> In their building materials guide, Ecology recommends consulting with a regional PCB coordinator for guidance on PCB-contaminated soil and mentions their Voluntary Cleanup Program, in which Ecology staff can provide technical assistance for cleanup questions.

Response, Compensation, and Liability Act for PCB spills of more than 1 pound ([40 CFR 761.121\(a\)\(1\)](#); [40 CFR 302.4](#)). See Box 5, *TSCA requirements for spill response and cleanup for a leaking PCB light ballast in a school*, for an example of how this policy applies to a leaking, PCB-containing light ballast in a school.

### Washington state environmental regulations

TSCA authority is not promulgated to states, so the EPA is the regulatory lead for PCB enforcement in Washington except for the management of waste materials. The EPA has delegated Resource Conservation and Recovery Act (RCRA) responsibilities to Ecology, meaning most PCB waste management is covered under the Dangerous Waste Regulations (Chapter 173-303 WAC) via the Hazardous Waste Management Act and is enforced by Ecology.

Another state regulation that pertains to PCBs is the MTCA. Through MTCA (Chapter 173-340 WAC), Ecology is authorized to regulate contaminated sites and oversee site identification, investigation, and cleanup. PCB releases to the environment must be reported under MTCA. However, this does not apply to releases from PCBs in building materials that are still in use.<sup>67</sup> Key informants also specified that MTCA typically does not apply to spills that occur indoors, and that TSCA/EPA has jurisdiction in these cases. Site cleanup for PCBs requires notification of and approval from the EPA via TSCA and is sometimes also required with Ecology via MTCA. Site cleanup for schools may be necessary if environmental contamination occurs from PCB building materials.

## TSCA requirements for spill response and cleanup for a leaking PCB light ballast in a school

### Assumptions:

- Capacitors in light ballasts are assumed by TSCA to contain high concentrations of PCBs ( $\geq 500$  ppm) ([40 CFR 761.2\(a\)\(4\)](#)).
- A school is a non-restricted access area according to TSCA definitions (40 CFR 761.1230(d)).
- Spill is not to water or a vegetable garden and is less than 1 pound.

Within 24 hours of becoming aware of the spill, the responsible party must ([40 CFR 761.125\(c\)\(1\)](#)):

- Restrict access to the spill within 24 hours.
- Record and document the spill area.
- Initiate spill cleanup.

### Cleanup requirements:

- Properly dispose of contaminated furnishings and toys (according to Ecology and TSCA rules).
- Clean up solid surfaces (impervious and non-impervious) using an appropriate solvent outlined in the rule ([40 CFR 761.125\(c\)\(4\)\(ii\)](#)). Leaked fluid might be present on the light fixture as well as any surfaces or objects below.
- Post-cleaning sampling must verify that surfaces have been cleaned to a concentration of no more than  $10 \mu\text{g}/100 \text{ cm}^2$  ([40 CFR 761.130](#)).

### Other requirements:

- Recordkeeping ([40 CFR 761.125\(c\)\(5\)](#)).
- Store, transport, and dispose of leaking light ballast according to TSCA and Ecology Hazardous Waste Management Act rules.
- Note that there is no reporting requirement in this instance (less than 1 pound of PCBs, not to water or vegetable garden), but the EPA recommends consulting with the regional PCB coordinator to ensure proper cleanup and disposal measures were taken.

## Federal and state occupational health regulations

In addition to federal and state environmental regulations, occupational safety and health rules for PCBs also apply where employees are exposed (i.e., school staff). The US Occupational Safety and Health Administration (OSHA) and the Washington State Division of Occupational Safety and Health (DOSH) have established Permissible Exposure Limits (PEL) for 42% and 54% chlorine PCBs.<sup>78,79</sup> These levels were adopted in the 1970s and came from the American Conference of Governmental Industrial Hygienists (ACGIH) recommendations developed in 1946.<sup>80</sup> The ACGIH documentation for these two PCB categories states that they were developed to be protective of eye, skin, and respiratory tract irritation, liver toxicity, and chloracne (a skin condition).<sup>81,82</sup> Note that the latest update to these values was in 2001 (when they added a notation that dermal absorption can be a significant contributor to exposure), which is before the International Agency for Research on Cancer changed the classification for PCBs to “carcinogenic to humans” in 2013.<sup>41</sup> OSHA acknowledges that many current PELs are outdated and may not be protective

of worker health.<sup>80</sup> The PELs set for PCBs are much higher than levels that would be expected at workplaces that are not actively working with PCBs. PCBs are not routinely sampled for in an occupational health regulatory context. PCBs are not otherwise specified in OSHA or DOSH rules, though they would technically be covered by other, more general rules throughout both federal and state codes for occupational safety and health (i.e., general duty clause, hazard communication).

### Non-regulatory EPA resources for PCBs

The EPA has published non-regulatory guidance for addressing PCBs in building materials in general, and in schools specifically. There are several fact sheets, guides, diagrams, and other resources that provide recommendations for a variety of audiences on PCBs in buildings. Many of these offer detailed steps and practical actions for determining whether PCBs are present, and for addressing PCB exposures and managing PCB-containing materials. The following are five major EPA resources that apply to PCBs in schools. Additional EPA resources for PCBs can be found in Table B2 in Appendix B.

Fact Sheet: [\*“PCBs in Building Materials”\*](#) (2021)<sup>61</sup>

This document provides information on identifying PCB products, considerations for sampling and testing for PCBs, guidance for renovations of buildings that will continue to be used, guidance for demolition and PCB waste disposal, as well as discussion of potential outdoor contamination. Of note in this fact sheet is that the EPA does not recommend testing building materials when building owners are not planning renovations or demolition. Instead, they recommend implementing best management practices first.

Fact Sheet: [\*“Practical Actions for Reducing Exposure to Polychlorinated Biphenyls \(PCBs\) in Schools and Other Buildings”\*](#) (2015)<sup>83</sup>

In this fact sheet, the EPA suggests four recommendations specific to schools built between 1950 and 1979 regardless of whether PCBs are known to be present. These include:

- Removing PCB light ballasts.
- Employing best management practices such as ventilation and cleaning strategies to reduce PCB exposures.
- Removing PCB-containing building materials when doing renovations.
- Considering encapsulating PCBs in building materials that were adjacent to PCB-containing materials that have been removed.

Webpage: [\*“Exposure Levels for Evaluating Polychlorinated Biphenyls \(PCBs\) in Indoor School Air”\*](#) (November 12, 2022)<sup>84</sup>

The EPA provides guideline exposure levels for PCBs in school indoor air. These levels were developed to be equivalent to the EPA’s oral Reference Dose (RfD) of 20 ng/kg/day for Aroclor 1254, and range between 100 and 600 ng/m<sup>3</sup>. Different levels were set for different age groups based on weight differences and assumptions about time spent in school buildings. The EPA specifies that these should not be considered “not-to-exceed” levels, but rather used to determine the need for further investigation of PCBs in school buildings. Table 4 shows the EPA exposure levels in comparison to other reference concentrations for airborne PCBs. The table includes new School Action Levels<sup>85</sup> set by the Vermont Department of Health; PELs adopted by OSHA<sup>79</sup> and DOSH<sup>78</sup> that are enforceable at places of work; Threshold Limit Value guidelines from ACGIH<sup>81</sup>; Recommended Exposure Limit guideline values established by the National Institute of Occupational Safety and Health (NIOSH)<sup>86</sup>; and cleanup levels for PCBs defined in Washington’s MTCA.<sup>87</sup>

Document: [\*"PCBs in Building Materials – Question and Answers"\*](#) (2015)<sup>90</sup>

This document clarifies and adds detail to the information from the above sources through a question-and-answer format. Additionally, there are two visuals that accompany this document that aim to help schools reduce PCB exposures and to manage PCB-containing building materials: [\*"Actions for Reducing Exposures to PCBs in Indoor School Building Environments"\*](#)<sup>91</sup> and [\*"An Example for How to Manage Polychlorinated Biphenyl \(PCB\)-Containing Materials in School Buildings."\*](#)<sup>92</sup>

**Table 4. Comparison of reference concentrations for airborne PCBs**

Agency	PCB type	Concentration	Description	Date established
EPA	All PCBs	100 – 600 ng/m <sup>3</sup> depending on age	Guideline level for indoor air in schools <sup>a</sup>	2015
Vermont Dept. Of Health	All PCBs	30 – 100 ng/m <sup>3</sup> depending on age	VT regulatory level for indoor air in schools <sup>b</sup>	2021
OSHA/WA DOSH	Chlorodiphenyl (54% chlorine, Aroclor 54)	0.5 mg/m <sup>3</sup> (500,000 ng/m <sup>3</sup> )	Regulatory occupational exposure limit <sup>c</sup>	1971
	Chlorodiphenyl (42% chlorine, Aroclor 42)	1.0 mg/m <sup>3</sup> (1,000,000 ng/m <sup>3</sup> )	Regulatory occupational exposure limit <sup>c</sup>	1971
ACGIH	Chlorodiphenyl (54% chlorine, Aroclor 54)	0.5 mg/m <sup>3</sup> (500,000 ng/m <sup>3</sup> )	Guideline occupational exposure limit <sup>d</sup>	1946
	Chlorodiphenyl (42% chlorine, Aroclor 42)	1.0 mg/m <sup>3</sup> (1,000,000 ng/m <sup>3</sup> )	Guideline occupational exposure limit <sup>e</sup>	1946
NIOSH	Chlorodiphenyl (54% chlorine, Aroclor 54)	0.001 mg/m <sup>3</sup> (1000 ng/m <sup>3</sup> )	Guideline occupational exposure limit <sup>f</sup>	1977
	Chlorodiphenyl (42% chlorine, Aroclor 42)	0.001 mg/m <sup>3</sup> (1000 ng/m <sup>3</sup> )	Guideline occupational exposure limit <sup>f</sup>	1977
WA MTCA	All PCBs	0.00044 ug/m <sup>3</sup> (0.44 ng/m <sup>3</sup> )	Regulatory cleanup standard <sup>g</sup>	1996

<sup>a</sup>: "health protective values intended for evaluation purposes"<sup>84</sup>

<sup>b</sup>: set to prioritize identification and remediation of PCB sources, also serves as cleanup level<sup>85</sup>

<sup>c</sup>: adopted from 1968 TLVs, "OSHA recognizes that many of its PELs are outdated and inadequate for ensuring protection of worker health"<sup>80</sup>

<sup>d</sup>: set to prevent eye, skin, and respiratory tract irritation, systemic toxicity, and liver injury<sup>82</sup>

<sup>e</sup>: set to prevent eye, skin and respiratory tract irritation, liver toxicity, and chloracne<sup>81</sup>

<sup>f</sup>: set to reduce the risk of reproductive or tumorigenic effects<sup>88</sup>

<sup>g</sup>: From Risk Calculation (CLARC) tables for Method B, based on IRIS carcinogenic potency factor, calculated to ensure exposure doesn't increase an individual's lifetime risk of cancer by more than 1 in 1 million<sup>89</sup>

Webpage: [\*Polychlorinated biphenyl \(PCB\)-contaminated fluorescent light ballasts \(FLBs\) in school buildings\*](#) (August 30, 2022)

This webpage contains guidance for school administrators and maintenance personnel on PCB light ballasts. It has information on the risks associated with PCB light ballasts, detailed steps to identify PCB light ballasts, guidance on whether to replace a PCB light ballast, including cost-savings information and recommended cleanup and decontamination procedures, and proper disposal of PCB light ballasts and waste generated from cleanup and decontamination.

## Box 6

### Mitigation of PCBs in building materials

As removal of primary PCB sources and contaminated secondary sources in buildings can be costly and time-intensive, there has been interest in alternative strategies for managing PCBs in place. Management techniques for addressing PCB hazards can include ventilation and filtration, encapsulation of PCB sources and physical barriers, and cleaning practices.

#### Ventilation

One study, conducted in a 1961 elementary school building, found that improving ventilation and filtration reduced average PCB exposures by half, from 533 ng/m<sup>3</sup> to 274 mg/m<sup>3</sup>.<sup>64</sup> Another study in New York City schools showed portable air cleaners to be effective in lowering PCB levels in indoor air.<sup>93</sup> Finally, EPA considers ventilation a best management practice for PCBs.<sup>83</sup>

#### Encapsulation

EPA laboratory studies and modeling on encapsulation methods found that none of the coatings tested were fully impenetrable to PCBs, but that epoxy coatings were most effective.<sup>68</sup> They note that epoxies work best for sources with lower PCB contents (up to 430 ppm). One study, conducted in the 1961 elementary school building, observed a 44% reduction in airborne PCBs after encapsulation of caulking using a tape product followed by new silicone caulking.<sup>64</sup> EPA resources recommend building owners and administrators work closely with regional PCB coordinators to determine whether encapsulation is an appropriate method for their building, and to have a long-term inspection and maintenance plan in place to ensure encapsulation materials are in good condition.<sup>68,83</sup>

#### Cleaning practices

Cleaning practices recommended by the EPA and others include cleaning surfaces with wet methods or vacuuming with a high-efficiency particulate air (HEPA) filters; avoid using brooms, dusters, or compressed air that can make dust particles become airborne; washing toys; regular and frequent cleaning schedules; use of appropriate protective clothing during cleaning; hand and face washing after cleaning; and proper disposal of cleaning supplies.<sup>45,83</sup>

#### Other administrative practices

Other recommendations include elements of operations and maintenance plans such as providing in-depth hazard training on PCBs for select maintenance personnel, providing PCB awareness training for other building occupants, and having proactive plans and reporting systems for activities that may disturb PCB-containing material.<sup>45,69</sup>



## Roles and responsibilities related to PCBs in schools

### School building owner/operator

- Provide a healthy, safe environment for school building occupants.
- Remove and properly dispose of leaking PCB light ballasts (required).
- Follow appropriate procedures following a spill such as a PCB light ballast leak (required).
- Recommended to test building materials for PCBs prior to renovation or demolition work and abate or mitigate as appropriate.
- Recommended to implement best management practices for reducing PCB exposures (such as cleaning, ventilation).
- Recommended to coordinate with Region 10 PCB coordinator in the following cases:
  - After a spill to ensure proper cleanup and disposal.
  - After finding PCB-containing building materials  $\geq 50$  ppm.
  - To determine whether testing building materials is advised.
  - To determine whether air or surface sampling is advised.
  - To determine whether encapsulation is an appropriate mitigation measure.
  - Any other questions that arise around PCB hazards in schools.

### Region 10 PCB coordinator

- Provide guidance for whether/how to conduct air or surface sampling for PCBs.
- Provide guidance for whether to test building materials for PCBs.
- Make recommendations for whether encapsulation is appropriate for PCBs.
- Provide guidance on PCB spill cleanup and disposal of PCB items.

### Federal EPA

- Enforce TSCA PCB rule – use, storage, transportation, and disposal of PCB items; PCB spill cleanup.
- Oversee PCB remediation in buildings.
- Occasional oversight of PCB waste management in certain circumstances.

### WA Ecology

- Oversee/enforce PCB waste management (Hazardous Waste Management Act).
- Oversee PCB releases to the environment (outdoors) – site identification, investigation, and cleanup (MTCA).

### WA Labor & Industries/DOSH

- Oversee/enforce workplace exposures to PCBs.

### WA DOH School Environmental Health Program

- Work with Local health jurisdictions, OSPI, public and private schools/districts, and other groups to ensure environmental health and safety in schools.
- Support implementation of the [State Board of Health School Rule, Chapter 246-366 WAC](#).
- May provide PCB support from a general school EH&S perspective.

### Local health jurisdictions

- May conduct school health and safety inspections.
- May provide PCB support from a general school EH&S perspective.

## Regional PCB Coordinators

A common recommendation in the EPA's resources is to consult with a regional PCB coordinator. In particular, the EPA recommends building owners and operators consult with their region's EPA PCB coordinator to decide whether air sampling or testing of building materials should be done and whether it should be done following implementation of best management practices; to discuss if encapsulation is appropriate; or in cases where air sampling has been conducted and levels are higher than exposure levels for school settings. Washington state is part of EPA's Region 10, which has one PCB coordinator.

**Table 5: Summary of select EPA requirements and recommendations for PCBs in buildings**

Activity	Required	Recommended	Sometimes recommended	Not recommended
<b>Testing</b>				
Testing building materials before renovation/demolition	No	Yes	No	No
Testing building materials when no renovation/demolition is planned	No	No	No	Yes
Testing air for PCBs before or after abatement or mitigation	No	No	Yes	No
Testing surfaces for PCBs before or after abatement or mitigation	No	No	Yes	No
<b>Cleanup, removal, and remediation</b>				
Spill cleanup for leaking PCB-containing light ballasts	Yes, in 24 hrs	No	No	No
Removing leaking PCB-containing light ballasts	Yes	No	No	No
Removing non-leaking PCB-containing light ballasts (functioning or non-functioning)	No	Yes	No	No
Removing building materials tested to have PCBs <50 ppm	No	No	Yes	No
Removing building materials tested to have PCBs ≥ 50 ppm	Yes	No	no	No
<b>Other hazard reduction strategies</b>				
Encapsulating building materials with PCBs	No	No	Yes	No
Best management practices for ventilation and cleaning	No	Yes	No	No

**Table 5: Summary of select EPA requirements and recommendations for PCBs in buildings (continued)**

Activity	Required	Recommended	Sometimes recommended	Not recommended
<b>Reporting and notification</b>				
Reporting of leaking light ballasts	No	Yes	No	No
Reporting building materials $\geq 50$ ppm	No	Yes	No	No
Reporting PCB abatement or mitigation activities for building materials	No	Yes	No	No
Reporting storage of PCB waste	Yes, with exceptions	No	No	No

### PCB regulations in other states

Very few states have their own regulations pertaining to PCBs in schools. Rhode Island includes PCBs in a list of chemicals that shall not be purchased and are “prohibited from a school” in an [Appendix to their regulations for school health programs](#), though further detail or guidance is not provided.<sup>94</sup> Connecticut requires that PCB presence/absence be determined before the start of school construction projects, along with a PCB Management and Abatement Plan if PCBs are found or assumed to be above 50 ppm in building materials.<sup>95</sup>

The most notable state regulation regarding PCBs in schools is Vermont’s new 2021 rule that mandates air testing for PCBs in all schools built or renovated before 1980.<sup>96</sup> The Vermont Department of Health developed School Action Levels for PCBs in indoor air in schools, which the Vermont Department of Environmental Conservation has the authority to enforce. Funding has been provided for contracted consultants to conduct the inspections, building inventories, and indoor air PCB sampling in the 327 affected schools. If PCB levels are above the School Action Levels, schools are required to take action, such as limiting occupancy of areas with high levels or identifying and addressing PCB sources. Details about this program can be found in Appendix A.

Information and guidance on PCBs provided by other state agencies are limited in many states. According to a 2016 report by Senator Edward J. Markey of Massachusetts<sup>97</sup>, there are 15 states that do not include any information on PCBs specific to schools on their websites. Only five states provide PCB testing guidance for schools on their websites.

### Existing Washington state programs and resources for addressing PCBs in schools

#### [Department of Ecology’s polychlorinated biphenyl \(PCB\) light replacement in schools program](#)

Through their Product Replacement Program, Ecology currently provides reimbursement to eligible K–12 schools to assist with the removal, proper waste management, and replacement of all remaining intact, non-leaking PCB-containing light ballasts. The program was developed to implement one of the recommendations of Ecology and DOH’s 2015 Chemical Action Plan for PCBs. A school, tribe, or district must first submit an application including a brief assessment of facilities to identify lights suspected to contain PCBs, a project plan, and a waste management plan. After the application and project plan are approved by the Ecology Product Replacement

Program, the approved work may be performed by a qualified in-house electrician or a qualified contractor. Ecology and DOH personnel are available to provide guidance during replacement and disposal of PCB-contaminated waste. The school must register in the Washington State Payee System and keep records of costs to receive reimbursement of up to \$10,000. Once the work is finished and the school has submitted their voucher with required invoices, Ecology will review and process the reimbursement. Applications to the program became available in April 2022, and notification was provided to all public K–12 district superintendents in June 2022. As of July 2022, one school district in Washington had taken advantage of such funds, and several others had inquired about the program. Should funding become limited, applications will be prioritized to offer funds first to schools in economically disadvantaged areas and those with higher environmental health disparities. Efforts to increase awareness and engagement by school districts are underway. Outreach efforts include a joint bulletin with OSPI informing school districts of two funding options now available (see the second below) to address this hazard. Additionally, information about the programs will be disseminated through the Washington Association for Maintenance and Operations Administrators, a membership organization that serves school facilities directors. Funding will remain open through June 2023 and be reevaluated at that time.

### **OSPI's T-12 Lighting Fixture Removal and Replacement Grant**

OSPI has worked closely with Ecology and DOH to launch a PCB light ballast removal, replacement, and disposal program. The grant fund of \$1.5 million from the 2022 Supplemental Capital Budget provides schools with reimbursement for removing and disposing of T-12 ballasts manufactured on or before 1979. Public, charter, and state-tribal education compact schools are eligible for funding only if all funding from utility company rebate programs available to Washington schools have been exhausted. To receive grant funding, schools must provide documentation to OSPI showing (1) a certified electrician's report showing the number and location of PCB-containing lighting fixtures and ballasts in their facilities and (2) the age and primary use of each facility where the T-12 lighting fixtures and ballasts are located. The grant funds became available in September 2022 and must be spent before June 30, 2023.

### **PCB information on Washington state and local government websites**

We also conducted a review of government websites to learn what kinds of information are provided at the state and local levels about PCBs in general and/or in schools. We included LHJ websites as well as Educational Service Districts (ESDs) in our search as these are organizations that generally provide health and safety oversight and support for schools.

At the state level, both DOH and Ecology provide a variety of general and school-specific information about PCBs along with links to various EPA resources. Of the 35 LHJs in Washington, we found that only two provided general information about PCBs (Spokane Regional Health District and Public Health—Seattle & King County). In contrast, 32 of the 35 health district webpages had information about other types of environmental hazards such as lead, pesticides, and wildfire smoke. None of the nine ESDs had information about PCBs on their websites, though five had information about other environmental hazards and three referenced environmental health services through their workers' compensation trusts or risk management services. Table B1 in Appendix B shows the government agencies that provided information about PCBs on their websites and includes the kinds of information provided (fact sheets, guides, or publications about PCBs created or referenced by the agency) and what external resources the site references.

### **Other programs and guidance addressing PCBs in schools and other buildings**

Western States Pediatric Environmental Health Specialty Unit (PEHSU) [Fact Sheet](#)<sup>98</sup> and [Poster](#)<sup>50</sup> (2017)

Western States PEHSU (which receives funding from the EPA) has published a fact sheet and poster about PCBs in schools. They recommend many of the same strategies as the EPA, but also place an emphasis on green cleaning as a best management practice. They point out that green cleaning will also reduce exposure to germs, allergens, some other toxic chemicals on surfaces, and toxic chemicals found in other types of cleaning products or methods.

Washington Department of Ecology [PCBs in Building Materials webpage](#)<sup>70</sup> (2022)

Ecology recently published a guide titled “[How to Find and Address PCBs in Building Materials](#).”<sup>67</sup> This 59-page document provides extensive guidance for finding and addressing PCBs in exterior building materials. It is primarily intended for use prior to renovation or demolition to prevent PCB contamination of stormwater. The guide details steps for PCB identification, waste management, and abatement, and has background information on PCB regulations in Washington. There is an [accompanying guide and worksheet for estimating costs](#)<sup>99</sup> of PCB abatement in building materials. These materials do not provide guidance for addressing PCB exposures or hazards indoors for building occupants.

University of Washington Environmental Health & Safety [PCBs webpage](#)<sup>100</sup> (2018)

The University of Washington Environmental Health and Safety department requires a “good faith survey” to be completed before all repair, renovation, or demolition projects to screen for PCBs in building materials such as caulking, glazing, and joining materials. Suspect materials must be sampled for PCBs, and if found, must be managed according to [University policy](#)<sup>101</sup> and EPA regulations. A “[PCB Caulking Work Plan](#)”<sup>102</sup> was also published by UW EH&S in 2014 that details University policies and serves as a sample work plan for PCB work procedures, removal methods, cleanup and decontamination procedures, waste management requirements, and post-removal sampling approaches.

## Potential PCB hazards in Washington schools

There is much we don’t know about the presence of PCBs in Washington schools and across the nation. Without a requirement or incentive to sample air or building materials, most schools do not know whether they have PCBs above allowed levels in their buildings or whether there are potential PCB exposures to students, staff, or other building occupants. While there have been some efforts to estimate the number of schools potentially containing PCBs on the national level, we did not encounter similar efforts here in Washington state. To our knowledge, there also has not been any systematic work to inspect or test schools for PCBs to quantify the number of affected schools in Washington or nationally, apart from the new Vermont rule.

### PCBs in schools at the national level

School buildings built between 1950 and 1980 are suspected of having PCB-containing building materials like other buildings built in that era. One review study<sup>10</sup> estimated that between 27% and 54% of schools built between 1950 and 1980 have PCB-containing building materials. A 2012 EPA study<sup>62</sup> in five New York schools built between 1950 and 1980 found 17.8% of interior caulk and window glazing samples and 73% of exterior caulk and window glazing samples were greater than or equal to 50 ppm, with samples ranging up to 440,000 ppm. The same study also conducted surveys and inspections of light ballasts and found between 25% and 95% of ballasts likely contained PCBs.

Study data is also limited regarding PCB exposures or concentrations in air and other exposure



media. A 2017 study<sup>103</sup> of six Indiana and Iowa schools built between 1918 and 1986 found PCB concentrations ranging up to 194 ng/m<sup>3</sup> in indoor air, compared to up to 3 ng/m<sup>3</sup> in air outdoors. The 2012 EPA study<sup>62</sup> in New York measured PCBs in indoor air in the schools up to 2,920 ng/m<sup>3</sup>, with a median of 318 ng/m<sup>3</sup>. Another study<sup>64</sup> in a Massachusetts school built in 1961 found concentrations between 350 and 780 ng/m<sup>3</sup> that were from building materials alone, as all PCB light ballasts had been removed. Studies have found significant variability in indoor air concentrations within and between schools, and over time.<sup>62,66</sup> Another study<sup>104</sup> reported that in both rural and urban study locations in Indiana and Iowa, inhalation exposure for PCBs was greater for children than for their mothers due to a five- to ten-fold increase in indoor air PCB concentrations in schools compared to homes.

Other information available about PCB exposures in schools comes from high-profile cases in schools and from the new Vermont rule. At Sky Valley Education Center in Monroe, WA, 81 indoor air samples for PCBs were taken between 2014 and 2016, before remediation activities occurred.<sup>105</sup> Samples ranged between levels not detectable to 630 ng/m<sup>3</sup>. Fiftyeight samples (72%) were below the limit of detection, while five samples (6%) exceeded the EPA exposure levels for schools based on occupant age.<sup>105</sup> At Burlington High School in Vermont, the case that prompted the new Vermont rule, PCB levels in indoor air ranged from 160 to 6,000 ng/m<sup>3</sup> in one 1964 building.<sup>106</sup> From the available data related to the Vermont rule, PCBs in indoor air have ranged from not detectable to 210 ng/m<sup>3</sup>, with 96 samples (54%) below the limit of detection. Seven samples (9%) have exceeded the School Action Level set by the rule, though none of these is higher than the EPA exposure levels for schools based on occupant age.<sup>107</sup>

### **PCBs in schools in Washington**

In 2015, Ecology published a [Chemical Action Plan \(CAP\) for PCBs](#),<sup>108</sup> in which they developed recommended actions to identify, learn more about, and address PCBs in a variety of settings.

One recommendation was to identify PCB light ballasts in schools and to encourage their replacement. This led to the development of the “PCB light replacement in schools” effort by Ecology’s Product Replacement Program.<sup>109</sup> In conjunction with DOH, Ecology attempted to identify, quantify, and locate PCB light ballasts in schools in the state. They consulted data from OSPI and the Washington State University Energy Program and sent a survey to schools with a monetary incentive for completion in 2021. The existing databases were incomplete, and the survey yielded very few responses, so the extent of the presence of PCB light ballasts is still unknown.

We discussed a variety of possible methods (including using permit data from the Washington State Department of Labor & Industries [L&I]) with our key informants to determine whether it might be possible to develop a list of schools that had not had PCB light ballasts replaced, but it was determined that this would not be feasible without school districts’ required cooperation. Multiple key informants suggested most of these light ballasts had already been replaced, many in the 2010s when utility companies had programs for replacement to address energy efficiency. Some key informants also believed some schools and districts had opted to hire their own contractors for replacement, in some cases to avoid publicity or state involvement. Only one school district has applied for funds to address PCB light ballasts through the Product Replacement Program as of mid 2022.

Another recommendation identified in Ecology’s CAP for PCBs was to “assess schools and other public buildings for the presence of PCB-containing building materials.”<sup>108</sup> From key informant interviews and searches on state websites, it does not appear that this has yet been completed for schools. To describe the potential prevalence of PCBs in schools, we used OSPI public school building data to estimate the number of school buildings more likely to have PCB-

containing building materials based on their age and modernization status. Widespread use of PCB-containing building materials started in 1950 and lasted through 1979, when PCBs were banned by the EPA. Thus, we focused on Washington schools built or modernized before 1980 as most likely to have PCB-containing building materials. In Washington, 2,818 (49.4%) of public school-related buildings or structures were built before 1980. Of those, 1,681 buildings (29.5% of all public school-related buildings) have not been replaced or modernized since 1980 and are more likely to include PCB-containing building materials that may pose a risk to humans. Figure 5 illustrates the relative proportion of pre-1980 buildings within each Washington legislative district, whereas Table 6 describes the number of school buildings by county.

**Figure 5: School buildings and structures built and/or modernized prior to 1980, by legislative district**

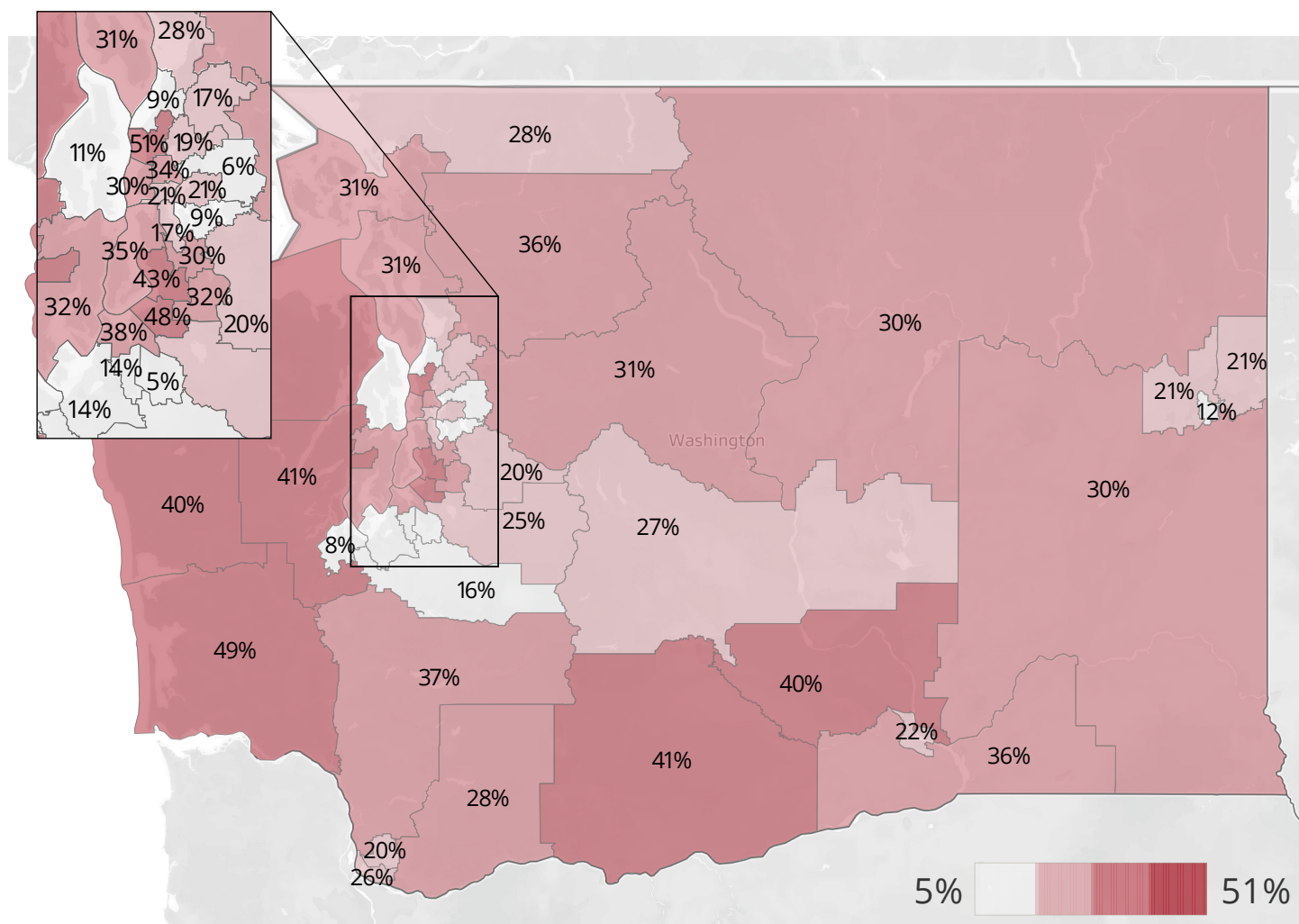


Table 6: School buildings built and/or modernized prior to 1980, by county

County	# of buildings	# of buildings <1980	Percent of <1980 in home county	Percent of <1980 in WA state
Adams	64	17	26.6%	1.0%
Asotin	31	6	19.4%	0.4%
Benton	125	33	26.4%	2.0%
Chelan	63	16	25.4%	1.0%
Clallam	100	46	46.0%	2.7%
Clark	324	81	25.0%	4.8%
Columbia	8	5	62.5%	0.3%
Cowlitz	112	57	50.9%	3.4%
Douglas	48	16	33.3%	1.0%
Ferry	14	6	42.9%	0.4%
Franklin	62	11	17.7%	0.7%
Garfield	2	1	50.0%	0.1%
Grant	123	24	19.5%	1.4%
Grays Harbor	129	58	45.0%	3.5%
Island	68	22	32.4%	1.3%
Jefferson	34	17	50.0%	1.0%
King	1255	380	30.3%	22.6%
Kitsap	142	37	26.1%	2.2%
Kittitas	35	13	37.1%	0.8%
Klickitat	46	18	39.1%	1.1%
Lewis	141	54	38.3%	3.2%
Lincoln	25	18	72.0%	1.1%
Mason	80	38	47.5%	2.3%
Okanogan	41	9	22.0%	0.5%
Pacific	38	15	39.5%	0.9%
Pend Oreille	16	6	37.5%	0.4%
Pierce	681	123	18.1%	7.3%
San Juan	29	9	31.0%	0.5%
Skagit	123	44	35.8%	2.6%
Skamania	17	14	82.4%	0.8%
Snohomish	620	154	24.8%	9.2%
Spokane	251	53	21.1%	3.2%
Stevens	72	26	36.1%	1.5%
Thurston	246	45	18.3%	2.7%
Wahkiakum	11	4	36.4%	0.2%
Walla Walla	60	25	41.7%	1.5%
Whatcom	158	47	29.7%	2.8%
Whitman	43	23	53.5%	1.4%
Yakima	267	110	41.2%	6.5%
Grand Total	5704	1681	---	100.0%

PCBs have been found in Washington state buildings that are of similar ages to the schools listed above. One 2011 study<sup>110</sup> sampled and quantified PCBs in building materials in older buildings in Seattle. The “[Lower Duwamish Waterway Survey of Potential PCB-Containing Building Material Sources](#)” examined a 5.5-mile stretch of the Lower Duwamish Waterway (LDW) located in Seattle, south of Elliott Bay. The goal of this survey was to better understand and identify sources of sediment pollution, specifically PCBs, to prevent further pollution in the LDW, where high PCB concentrations in paints and caulk have been detected. Composite paint and building caulk samples were taken from 31 properties built between 1950 and 1977, primarily industrial and commercial buildings, in the Diagonal Avenue South stormwater drainage basin. Ecology reported PCB concentrations of 0.85 to 61 mg/kg in 39% of the building paint composite samples, and PCB concentrations of 3.0 to 920 mg/kg in 47% of the building caulk composite samples. Another Ecology effort<sup>111</sup> estimated that there are between 1.7 and 6.2 million PCB light ballasts and 87 metric tons of PCBs in caulk in Washington state buildings.

Based on the age of Washington’s school buildings, the discovery of PCBs in schools where sampling has been conducted in Washington<sup>105</sup> and in other states,<sup>97,106,107</sup> as well as in buildings of similar ages in Washington,<sup>110,111</sup> it is likely that PCBs are present in some Washington schools. However, it would require inspecting and sampling for PCBs in building materials (including light ballasts), indoor air, and/or surfaces to determine whether they exist in a specific school and whether building occupants are potentially exposed.

## Local health jurisdiction activity survey

We administered a survey to LHJ school EH&S leads to summarize current LHJ school activities and identify program implementation and maintenance barriers, facilitating factors, and needs. *Routine programs* are defined as established EH&S inspection-based programs, while *developing programs* include programs actively being built.

## Current school inspection program activities

*“Schools are a community resource and include health centers, libraries, play fields, community art rooms and gardens, etc. They are not just for instruction. A past survey of one of our partner districts showed their schools were used more hours per year by community members than by students. School health and safety protects our entire community.” – Routine program*

A total of 22 LHJs completed an online REDCap survey. The 63% response rate represents approximately 90% of public-school children across the state. Figure 6 illustrates the geographical distribution of LHJ survey responses. It is important to note that several of the non-responding LHJs have routine and developing programs, and that the survey’s timing likely competed for very limited staff time in these rural counties. Additionally, four key informant interviews were conducted with routine programs to further elucidate barriers and facilitators to successful program implementation.

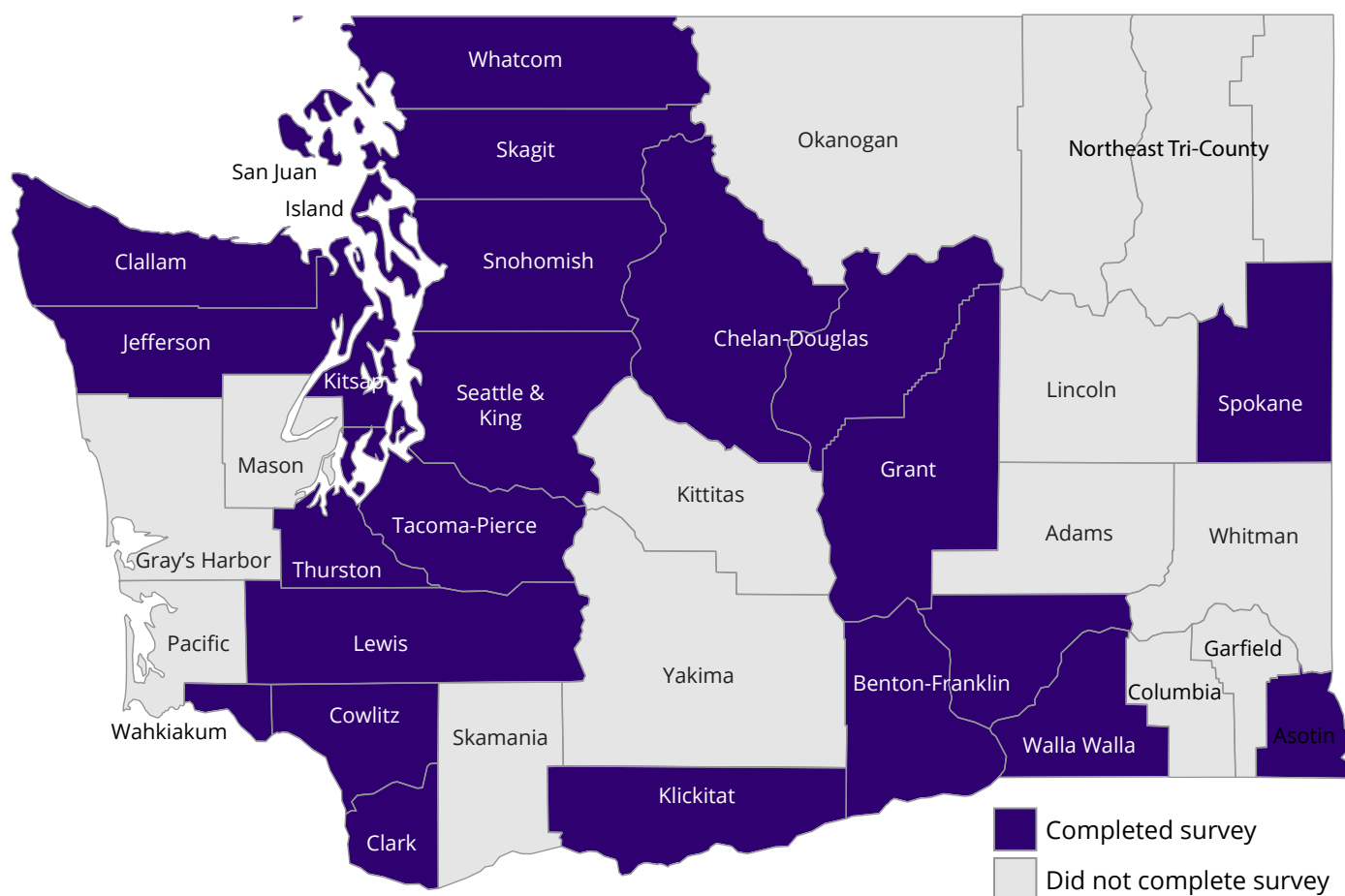
Our first survey question split our survey findings into LHJs with some semblance of a school EH&S program and those without:

*Does your LHJ currently have a K–12 school EH&S inspection program that focuses on health and safety issues in schools (besides food safety)?*

Thirteen of the 22 LHJs answered “Yes” or “Other” and were given the full survey, which included questions about program activities, administration, and implementation barriers and facilitators. Nine LHJs that selected “No” were not asked questions about activities about administering a

school program but were asked questions about perceived barriers and facilitators to program implementation, as well as resources used.

**Figure 6: LHJ survey responses**



This question allowed an open-ended comment box connected to “Other” for LHJs to further describe the degree to which a program delivered EH&S activities. Seven (32%) of the 22 LHJs have a routine school program; seven (32%) have a program in development; and eight (36%) have no program or only complete building plan reviews for new construction or remodels. Unfortunately, two respondents misclassified their response to this question, selecting “No program” even though they are actively developing a program and were not given the full survey to complete. An additional program that only provides plan review services answered “Other” but didn’t complete the program activity-related questions. Therefore, many of the findings throughout this section are based on the 12 developing or routine programs that answered “Yes” or “Other” to having a program (percentages from these 12 are henceforth labeled with ‡).

### Inspection frequency

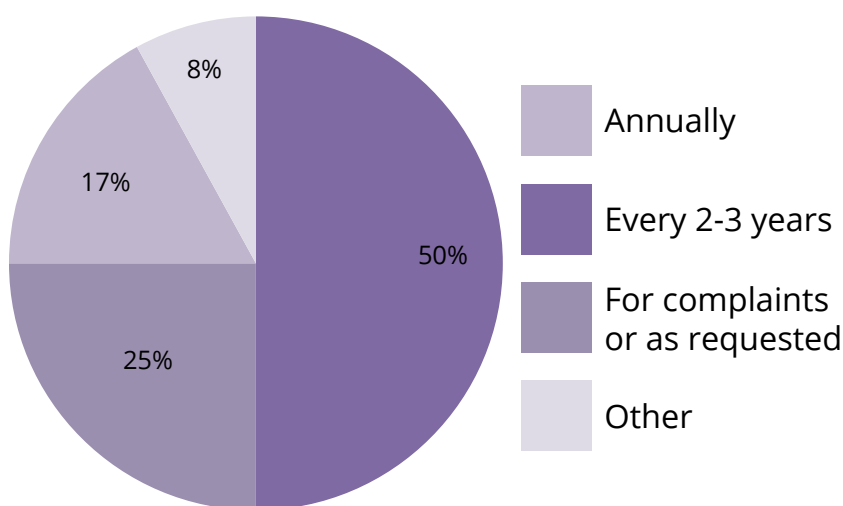
LHJs were asked how frequently they visit schools for EH&S inspections. Only two (17%)‡ of the 12 conducted annual routine school inspections (Figure 7). Half‡ performed inspections every two to three years, including one LHJ that allows schools to self-inspect in between LHJ inspector visits. The remaining one-third‡ only inspected for complaints or as requested, or they marked “Other.” As required by chapter 246-215 WAC all LHJs inspect school food service facilities twice per year. We found no reported difference between school type (public, private, etc.) or school



age group (elementary, middle, and high school) frequency. The seven LHJs with full inspection programs all complete school inspections every one to three years. All LHJs surveyed conducted routine food service inspections in schools, typically twice per year. These were usually conducted separately from full EH&S inspections.

*"[Our] program includes an innovative self-inspection model, developed with the advisory committee in 1999. It consists of risk-based inspections conducted by the health district, followed by re-inspections and comprehensive self-inspections conducted by school representatives. [We] assists schools in identifying and prioritizing inspection items. Accountability is ensured through written agreements, annual training and spot checks. This collaborative approach incorporates the expertise of all school partners and has resulted in strong partnerships, earlier identification/correction of health and safety concerns (more cost-effective for schools), and safer learning environments for students and the community."*  
**– Routine program**

**Figure 7: School inspection frequency**



## Hazard identification

The survey asked about the most frequently cited hazards identified by LHJ inspectors. Chemical hazards in science labs and lighting issues were the two most frequently cited, followed by playground hazards, unsafe conditions, and heating, ventilation, and air conditioning (HVAC) or poor air quality issues (Table 7). It is an important note that “playground hazards” were not included on the survey as an option but were identified in an open-ended response box connected with “Other,” and were still a top hazard. Other hazards listed included chemical and physical hazards in vocational classrooms, cleanliness, chemical hazards in the classroom, and plumbing/sewage issues.

*“Overall poor chemical management (for labs, arts, shop, and facilities) are perennial problems for most schools.” – Routine program*

*“HVAC: lack of exhaust ventilation for 3D printers or CNC machines installed after initial school construction” – Routine program*

The most common complaints received by LHJs include indoor air quality issues, food safety, mold and moisture issues, and general safety. The LHJ serves as a liaison between the complainant and the school district to resolve health complaints, but their response is limited by legislation and resources.

**Table 7: Frequently cited hazards**

Hazards cited	Total (%)‡	Routine program	Developing program
Chemical hazards in Science Labs	9 (75%)	7	2
Lighting	7 (58%)	6	1
Playground hazards*	5 (42%)	3	2
Unsafe conditions, including Maintenance conditions	5 (42%)	4	1
HVAC issues or poor air quality	5 (42%)	4	1
Chemical hazards in Vocational classrooms	4 (33%)	4	0
Physical hazards in Vocational classrooms	4 (33%)	4	0
Cleanliness	4 (33%)	4	0
Unapproved chemicals in classrooms**	3 (25%)	3	0
Plumbing/sewage issues	3 (25%)	2	1
Unsecured chemicals in classrooms**	2 (17%)	2	0
Tipping hazard*	2 (17%)	2	0
Noise	2 (17%)	2	0
Food safety	2 (17%)	0	2
Fall hazards*	1 (8%)	0	1
Electric hazards*	1 (8%)	1	0
Pests	1 (8%)	1	0
Earthquake issues***	1 (8%)	1	0
Fire hazard***	1 (8%)	1	0

\*Other physical hazards written in

\*\*Other chemical hazards written in

\*\*\*Other hazards written in

## Corrective action

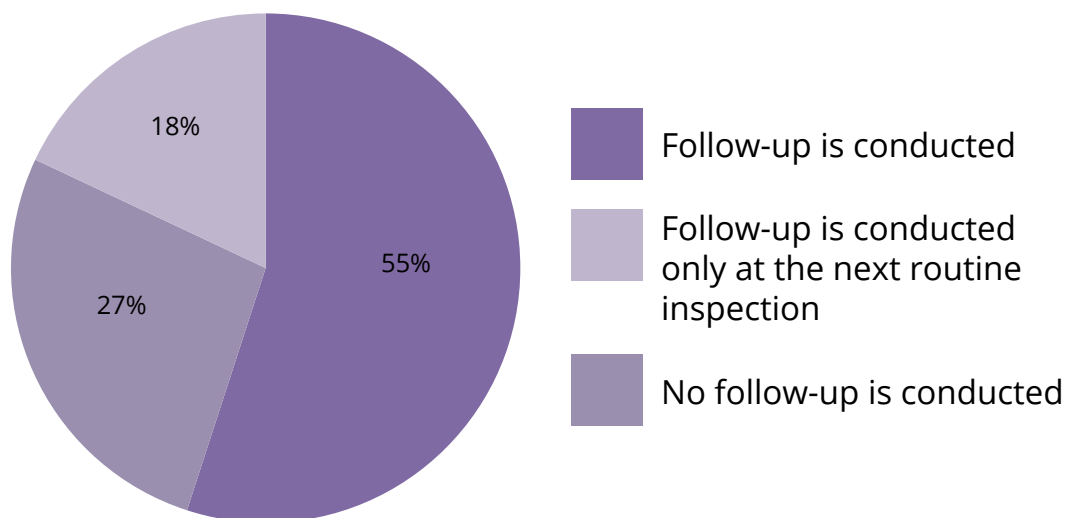
When hazards are discovered in schools, nearly three-quarters‡ of LHJs with programs follow up with schools, either immediately or at the next routine inspection, depending on severity (Figure 8). Note that one developing program did not respond and is not included in this percentage. About one-quarter do not follow up with schools at all.

Follow-up policies vary between LHJs and include requesting schools to provide their own corrective actions and time frame, documenting school responses to cited hazards, and reevaluating the hazards at the next inspection. If schools fail to address corrective actions after follow-up, over half of LHJs that follow up said there are no ramifications for schools. Only one jurisdiction described potential escalation. Note that LHJs can prevent a school from opening in the plan review phase, but in routine EH&S inspections, there are few ramifications for schools that fail to meet environmental health standards. When asked if LHJs require schools to notify the school community in the event of an imminent health hazard, one-fourth‡ selected yes, but all added caveats that notification is not required, only recommended, except for pesticide use. When asked what reasons schools give for not correcting issues after an inspection, the top two responses were lack of funding and that it was not required in regulations.

*“Draft inspection reports are sent to schools/districts (per the K-12 Guide) via spreadsheet format. They respond with correction comments. Final reports are then issued with their comments included. We inspect with an escort, so if there are hazards that need immediate attention, the school/district can initiate corrective action while we are there.” – Routine program*

*“Lack of a clear, concise code and inability to easily enforce regulations force us to dedicate a large amount of our available time coming up with solutions for school districts when they do not willingly make changes in response to inspections. While this aspect would not be removed with a new code/enforcement tool, our time commitment would be greatly reduced.” – Developing program*

Figure 8: Corrective action follow-up



### Trained workforce

All twelve LHJs with a program reported that their inspectors had received training from DOH’s School Program, with three-quarters<sup>‡</sup> receiving training annually or more frequently, including via a weekly/biweekly Zoom meeting run by DOH. Inspectors also engaged in a variety of other trainings provided by EPA, the US Centers for Disease Control and Prevention, the US Food and Drug Administration, L&I, the National Association of County and City Health Officials, Washington State and National Environmental Health Associations, and the Washington Association of Maintenance and Operation Administrators. The most frequently mentioned training need described was for playgrounds—specifically, the Certified Playground Safety Inspector (CPSI) training (Box 8).

Lastly, a little over one-third of LHJs surveyed publish an environmental health newsletter or keep schools regularly updated on environmental health issues. Topics covered include COVID-19 and other communicable disease prevention, food safety, and ventilation.

### Chemical hazards in schools

Only one-quarter of the 22 LHJs reported surveying schools for chemical hazards, including PCBs, asbestos, lead-based paint, lead pipes, hazardous waste storage, or mercury-containing products. When asked about PCBs specifically, only one jurisdiction had any estimation of the number of PCB-containing light ballasts in current use within their jurisdiction’s schools but did not maintain a list. Additionally, three LHJs reported responding to reports of leaking or smoking

PCB-containing light ballasts. For the few LHJs that had surveyed schools for other chemical hazards, nearly all described the surveys as part of a larger hazardous waste program, including “Rehab the Lab,” Ecology’s Pollution Prevention Partnership, and their local county hazardous waste management program (Box 9).

When asked about whether LHJs had knowledge of and shared current hazardous waste management funding programs, including OSPI’s Lead in Water Remediation Grant and Ecology’s Fluorescent Light Ballast Replacement Grant, there was a wide gap between LHJs familiar with available programs and LHJs sharing that information with schools. Over half said their inspectors were familiar with the Lead in Water grant, but only two (10%) shared information with schools. Similarly, about 40% reported familiarity with Ecology’s light ballast replacement grant, but only three (14%) reported having passed along the information.

#### Box 8

### What does it take to become a Certified Playground Safety Inspector?

To become a CPSI, you must successfully pass the National Recreation & Park Association’s CPSI exam. New candidates are highly encouraged to take the supplemental course, which consists of about 15 hours of training on topics including playground hazards, risk management, comprehensive safety programs, and entrapment, protrusion, and entanglement methods. The course is offered online, virtually, and in-person, while the exam is offered as a remote or in-person proctored exam at one of 200+ testing centers in the US. The course and exam fee for a Washington Recreation & Park Association (WRPA) member is \$590, or \$650 for a non-member. The CPSI certification is valid for three years, after which a re-certification test is \$199 for WRPA members and \$250 for non-members. Candidates must pay for their own hotel and transportation costs.<sup>112,113</sup>

#### Box 9

### Department of Ecology’s “Rehab the Lab” program

“Rehab the Lab” was a program funded by Ecology and implemented at the county level to assist in the removal of hazardous waste from schools. It was the most recent statewide effort to survey and remove school chemical hazards, such as lead, mercury, and otherwise outdated and unwanted chemicals. The program ran from 1998 to 2002, successfully disposing of 38.2 tons of hazardous chemicals from school buildings.

Ecology is in the initial stages of creating a new school lab cleanout program that will assist individual schools in identifying waste chemicals that are either expired or toxic for proper collection and disposal. While the criteria for this new grant program are not fully developed, it is projected to launch mid- to late 2023. Participating schools will be encouraged to adopt a green chemistry curriculum or switch to safer alternatives to be eligible. The application process will work similarly to Ecology’s current PCB Light Replacement in Schools program, and it will initially be offered to under-resourced and tribal schools, and to Pollution Prevention Assistance partners.

## Capacity and equipment for technical support

Among the 12 LHJs with a routine or developing program, half provided technical support to schools when EH&S issues were discovered that required sampling or testing. Technical support was most frequently provided for issues related to noise control, pest control, mold and moisture management, HVAC/ventilation, and water contamination concerns. Other technical areas where support was provided included concerns around air contaminants, contaminated building supplies, electrical issues, playground safety, food safety, and building plan reviews. LHJs unable to offer technical support can usually still provide guidance and referrals to schools.

*“Staff FTE and time limitations restrict the depth of campus safety inspection effort conducted. More importantly, the level of training and PPE provided to inspectors limits their activity. I do not expect my inspectors to be plumbers, electricians, building inspectors, and especially, hazardous waste specialists. Our best effort lies in validating a school’s active managerial control of risks. For example, does a school have a chemical management plan, do they follow it, and do they have a current chemical inventory, vs looking bottle-by-bottle in each cabinet.”*  
– **Routine program**

While technical support for schools is limited, many LHJs have tools locally available for sampling or testing. All<sup>‡</sup> reported having access to a light meter and sound meter, while most<sup>‡</sup> also reported having access to an infrared thermometer, moisture meter, and carbon dioxide monitor. Approximately half<sup>‡</sup> reported having access to an air flow meter, electrical tester, smoke pen for evaluating air flow, pH meter, chemical testing kit, and/or playground safety tools. Very few LHJs reported having access to chemical-protective gloves, hygrometers for humidity, carbon monoxide sensors, particle counters, light meters, total dissolved solids meters, wipe sampling supplies, voltage detectors, or respirators. No LHJs described having access to a dew point meter, wet bulb temperature monitor, radon monitor, combustible gas detector, oxidation-reduction potential meter for water, microwave tester, electrical gloves, or thermal infrared camera. Survey questions on sampling and testing tools for inspections were drawn from EPA’s *Indoor Air Quality Tools for Schools*<sup>114</sup> and departmental exposure science expertise. Table 8 summarizes the difference between the types of reported *information* and *technical support* delivered to schools for the specified EH&S hazards and control topics. For each topic, most responses were from LHJs with routine or developing programs, but all 22 LHJs surveyed were given the opportunity to respond.

**Table 8: Information and support provided by LHJs to schools**

Topic	Information	Technical support
Asbestos	3 (14%)	2 (9%)
COVID-19 ventilation	12 (55%)	4 (18%)
Green cleaning	7 (32%)	2 (9%)
Lead (paint)	5 (23%)	3 (14%)
Lead (pipes)	6 (27%)	2 (9%)
Mercury	4 (18%)	3 (14%)
Mold	7 (32%)	3 (14%)
PCBs	3 (14%)	2 (9%)
Radon	2 (9%)	1 (5%)
Wildfire smoke	12 (55%)	3 (14%)



## Legal authority and guidance resources

All LHJs with current or developing programs reported relying on the same three regulations, guidance documents, and state departmental resources to implement their school EH&S programs:

- Chapter 246-366 WAC *Primary and Secondary Schools*<sup>2</sup> (last updated in 1991).
- Individual consultation with DOH School Program.
- The DOH's *Health & Safety Guide*<sup>105</sup> (last updated in 2003).

Aside from local codes, other resources used include:

- Chapter 246-366A WAC ([implementation suspended since 2009](#))<sup>3,5</sup>.
- EPA's *Indoor Air Quality Tools for Schools*<sup>104</sup>.
- EPA *Model K-12 School Environmental Health Program*<sup>61</sup>.
- *Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards*<sup>106</sup> by the National Research Council of the National Academies.
- The U.S. Consumer Product Safety Commission *Playground Standards*<sup>107</sup>.

When seeking guidance on air quality recommendations, most LHJs use:

- DOH's *School Indoor Air Quality Best Management Practices Manual* (2003)<sup>108</sup>.
- DOH School Program's *Responding to Indoor Air Quality Concerns in our Schools* (2005)<sup>109</sup>.
- EPA's *Indoor Air Quality Tools for Schools*<sup>104</sup>.

Other mentioned resources include the American Society of Heating, Refrigerating and AirConditioning Engineers (ASHRAE) recommendations<sup>110</sup> and local guidance.

When asked what resources are most frequently used to support hazardous chemical-related recommendations, roughly half of LHJs cited:

- DOH School Program and Ecology-supported "Rehab the Lab" programs. Note that while "Rehab the Lab" occurred throughout the 1990s and early 2000s, it is still one of the most important resources for chemical hazard-related information and recommendations.

Other mentioned guidance includes:

- Ecology's *Laboratory Guide for Managing Dangerous Waste* (2015)<sup>111</sup> and Hazardous Waste and Toxics Reduction Program<sup>116</sup>.
- EPA's *Toolkit for Safe Chemical Management in Schools*<sup>112</sup>.
- Local county solid/dangerous waste program recommendations and specialists.
- Chapter 296-62 WAC: *General Occupational Health Standards*<sup>113</sup>.
- Pollution Prevention Assistance grant (Ecology)<sup>114</sup>.
- Chapter 296-800 WAC: *Safety & Health Core Rules*<sup>115</sup>.

Finally, when asked about pest control, integrated pest management (IPM), and pesticide use, LHJs reported using:

- DOH's School Program guidance (41%).
- EPA's *Model Pesticide Safety & IPM Guidance Policy for School Districts*<sup>117</sup> (27%).
- Washington State University (WSU) *School IPM* website<sup>118</sup>.
- IPM Institute of North America: *IPM Standards for Schools*<sup>119</sup> or *IPM STAR Certification*<sup>120</sup>.
- Washington State Department of Agriculture.

Unlike the previous resource questions, nearly 32% of LHJs were unsure of what guidance resources were available to consult for pest control.

# Barriers, facilitators, and needs for LHJ school EH&S program implementation

All LHJs, regardless of existing program status, were asked to rank their top three program implementation-related barriers, facilitators, and support needs from a select list of factors. Programs were also given an opportunity to choose “Other” and write in a barrier, facilitator, or need not listed. Each category was then weighted using the following formula to calculate a summary score that was used to rank the factors:

$$\text{Score} = (\text{Factor \#1}) \times (3) + (\text{Factor \#2}) \times (2) + (\text{Factor \#3}) \times (1)$$

## Barriers

The top three cited barriers to program implementation—reported by at least 50% of surveyed LHJs—were lack of funding, staffing, and training, followed by the lack of a clear, concise code (Table 9). Funding and staffing were reported as greater barriers by LHJs with full inspection programs than LHJs with programs in development. Each of our key informant interviews with LHJs revealed that Foundational Public Health Services (FPHS) funds have been instrumental for LHJs developing a new program or building capacity for an existing program. The following quotes from survey comments illustrate common differences in funding and capacity constraints between LHJs with established, routine programs and those without:

*“There is a constraint on FPHS funding that does not allow us to use it to replace existing fees. While we can use it to supplement existing fees, it puts us in a difficult position as LHJs with new programs can use the funding in lieu of fees, e.g., our schools pay for services, their schools don’t.” – Routine program*

*“I am contemplating a school program, but even with Foundational Health funding, it is difficult because of the historic underfunding in core programs.” – Program that conducts plan review only*

*“We currently do not have a full school inspection program. If we were required to start one, I would need our Board of Health support and adequate funding to add FTE and inspection equipment in order to do the work. Additionally, since we don’t have in-house experience, we would need training provided by DOH or coordinated regionally with LHJs that have programs currently.” – Program that conducts plan review only*

The top reported barriers for LHJs with programs in development were lack of training and clear codes. The following quotes from survey comments reflect sentiments from other programs in the process of developing their school EH&S programs.

*“In addition, standardized and widely available training is a huge barrier—training is mostly self-led and, without a standardized program, can take up to a year to fully train a new inspector. With a high turnover rate in public health, this often leaves us with a revolving door of new/partially trained staff, which benefits neither the LHJ nor the school. A ‘new inspector training’ model similar to that of the DOH Food Safety Group would be extremely helpful. Standardized state forms and inspection field marking guides would significantly help training efforts as well.” – Developing program*

*“Lack of defined codes and enforcement tools mean each interaction/inspection results in sometimes a month of follow-up and negotiation on corrections. Having defined tools for enforcement would not only minimize the need for these lengthy follow-ups but would also help significantly with standardizing our training and decision-making in the field.” – Developing program*

Additional barriers, in order of score, include competing priorities, time constraints, enforcement inability, resistance from school districts, COVID-19, outdated guidance, politics, and a limited understanding of requirements versus recommendations.

When asked what their perception was of the top barriers for schools in their jurisdiction with respect to meeting EH&S requirements and recommendations, LHJs reported budget constraints or lack of funding as the top barrier. This was followed by lack of staff and clear, concise regulations (Table 10).

*“All of our school partners desire to have safe, healthy learning environments and all have budgetary concerns.” – Routine program*

Other perceived barriers for schools were lack of support from district officials, time constraints, lack of training, limited understanding of health impacts, and COVID-19.

**Table 9: Top barriers for EH&S program implementation**

LHJ barriers	Total (%)	Routine program	Developing program	No program	Score
Budget constraints or lack of funding	11 (50%)	3	3	5	26
Staffing constraints or lack of personnel	14 (64%)	4	2	8	24
Lack of training	11 (50%)	2	3	6	20
Lack of a clear, concise code	9 (41%)	2	4	3	14

**Table 10: Top perceived barriers for school compliance**

Perceived barriers	Total (%)	Routine program	Developing program	No program	Score
Budget constraints or lack of funding	18 (82%)	5	6	7	45
Staffing constraints or lack of personnel	15 (68%)	6	5	4	27
Lack of clear, concise regulations	9 (41%)	2	4	3	13

## Facilitators

As shown in Table 11, the top factor LHJs reported as important to facilitate school EH&S program implementation was adequate funding, reported by 68% of surveyed LHJs, followed by clear, concise codes, frequent DOH training, and dedicated school EH&S personnel, aligning with the barriers reported by LHJs. LHJs with full inspection programs considered funding and clear codes to be more important facilitating factors than LHJs with programs in development.

*“Long-term funding support through FPHS or other mechanism would be most helpful.” – Routine program*

*“We had two staff trained 5+ years ago, but our program never materialized due to funding, and these two staff have left our agency. We have new staff with no training.” – No program*

Other facilitators include enforcement support, political support, county administrative support, low-cost or free training from the DOH School Program, community support, and program evaluation. Additional “Other” write-in facilitators included updated guidance, statewide consistency, ESD support, State Board of Health support, and a clear understanding of requirements versus recommendations.

*“[Our ESD] has an industrial hygienist; that expertise and partnership allows [our] school program to focus on areas such as playground safety and student-related complaints. The industrial hygienist provides services such as sound level surveys, Asbestos Hazard Emergency Response Act inspections, employee complaint response, etc. The expertise and partnership are beneficial to schools and public health.” – Routine program*

*“Successful school programs are based on trusting, collaborative relationships with school partners, including maintenance/facilities, administrators, nurses, principals, teachers, ESDs, designers, etc., not on enforcement. LHJs are one piece of a very complex puzzle, which includes many agencies, funding streams, etc.” – Routine program*

**Table 11: Top facilitating factors for EH&S program implementation**

Facilitating factors	Total (%)	Routine program	Developing program	No program	Score
Adequate funding	15 (68%)	5	4	6	40
Clear, concise codes	13 (59%)	6	3	4	24
Frequent training from DOH School Program	12 (55%)	4	6	2	20
Personnel specifically dedicated to school EH&S	11 (50%)	3	5	3	20

An important facilitator identified through an additional key informant conversation centers on the need to develop a risk-based model for school EH&S inspections, based on evidence from previous inspection encounters and/or a cross-sectional study of hazards identified in schools across the state. Many LHJs with routine programs have a thorough understanding of common hazards within schools in their jurisdiction, but new programs do not have the historical inspection experience to know what hazards to expect. A risk-based approach could provide the foundation for a baseline inspection form highlighting the most prevalent hazards, efficacious control measures, and technical assistance resources. Additionally, utilizing illness reporting systems established during COVID-19 response to identify situations where the school building and grounds could be contributing to student illnesses could further focus LHJs and school districts on priority areas. See Box 10 for one LHJ’s example of identifying priority hazards through illness and injury data reporting systems.

## Needs

Sixty-eight percent of surveyed LHJs reported clear, concise codes as a top support need from state agencies, followed by funding, technical support, low-cost training and certification, and more frequent training opportunities (Table 12). Support needs were ranked similarly by routine programs and programs in development.

## A case study on one LHJ's attempt to better understand health and safety impacts in their school environments

An LHJ has identified the benefits and barriers to data collection in schools by using the REDCap data collection tool to periodically survey schools on their incidence of COVID-19, other communicable disease trends, and injury trends. This LHJ began collecting data from schools through use of the REDCap tool to collect individual case information directly from school nurses and district personnel. As the guidance shifted from individual case collection to aggregate weekly data, the REDCap survey was redesigned to collect both COVID-19 data and general health room data that could be useful for the School Environmental Health & Safety Program. After consulting with school nurses, human resources, and safety and risk management staff at several local school districts, a new survey was created that had two required components (total weekly number of student COVID-19 cases and staff COVID-19 cases) and one optional component: health room data.

The new health room data component asked individual school nurses to report:

- Number of students who visited the health room with respiratory symptoms (excluding COVID-19 positive cases).
- Number of students who visited the health room with gastrointestinal symptoms (excluding COVID-19 positive cases).
- Number of students who visited the health room with playground-related injuries.
- Number of students who visited the health room with athletics/physical education-related injuries.
- Number of students who visited the health room with other injuries (please describe).

The vision was that collecting this data would allow epidemiologists and environmental health staff to predict trends in communicable disease and injury to assist the public health programs to best meet the needs of the community and highlight high-priority areas where an abnormal number of illnesses or injuries were occurring. In addition, the data epidemiology team at the LHJ created a PowerBI dashboard based on the survey data that could be used to visualize trends and share with schools so they could take preventative measures.

A barrier to the survey and data collection is that there is no requirement for schools to report many of these data points. The survey was optional, and approximately two out of the nine districts in this area routinely complete the information. However, even with a limited number of schools reporting, the LHJ has been able to identify trends that have led to improvement in school facilities and procedures.

Additional support needs include plan review technical assistance and training, educational materials for schools, funding for training and equipment, liaison with OSPI and school districts, enforcement support, public relations support, EH&S newsletters, and access to tools and equipment. Under "Other," LHJs wrote in long-term funding support, updated guidance, ESD industrial hygienist staff, and new program set-up guidance.

*"In addition, there is a large gap with plan review training—more resources and opportunities in this area would yield a good return, as many of the issues we find on complaints/in the field could have been easily prevented during the plan review process if caught." - Developing program*



### Box 10 continued

The first week of data collection, a concerning anomaly presented itself. An elementary school nurse from one small-sized school district reported 54 playground injuries in a single week. The LHJ's team reached out to the school nurse directly to find out more about the types of injuries occurring. During the conversation, the school nurse amended the report to 29 injuries but reported that at least nine of these reported injuries were head injuries. Other injury types ranged from simple scrapes and bruises to collisions, impacts, and falls. Falls, impacts, and head injuries are among the leading types of injuries and leading causes of fatalities on playgrounds in the United States. As such, the LHJ followed up with the district to continue collecting and monitoring injury data. The LHJ is currently working with the district's safety and risk management team to help identify the causes of injuries and develop a plan for reducing their frequency. Improved data systems in school health rooms may encourage cleaner and more consistent data collection and improve participation in public health surveys, ultimately resulting in a safer school environment for children.

**Table 12: EH&S program support needs from state agencies**

Needs	Total (%)	Routine program	Developing program	No program	Score
Clear, concise codes	15 (68%)	5	5	5	26
Funding for school EH&S program	10 (45%)	3	3	4	16
Technical support	12 (55%)	3	3	6	14
Low-cost or free training & certification	16 (73%)	5	5	6	13
More frequent training opportunities	10 (45%)	5	3	2	13

The top two reported support needs from Washington State legislators were funding and updated, enforceable regulations, both cited by over three-quarters of surveyed LHJs, followed by a clear legislative mandate (Table 13). The need for a clear mandate was ranked higher by LHJs developing their programs than by those with routine programs.

**Table 13: EH&S program support needs from legislators**

Needs	Total (%)	Routine program	Developing program	No program	Score
Funding for school EH&S program resources & staff	17 (77%)	5	5	7	36
Updated & enforceable regulations	17 (77%)	6	5	6	36
Clear legislative mandate	15 (68%)	3	6	6	25

## Limitations

Our survey faced some limitations. Of 35 LHJs, we received submissions from 22, for a response rate of 63%. We recognize the time it took to complete our survey and the seasonal time in which it was delivered may have been a significant burden to LHJs. The opinions and perspectives of 13 LHJs are not included in this report, including a few LHJs with long-standing, routine programs. These LHJs represent just over 10% of public school children in the state, and all thirteen are classified as rural counties by the Washington State Office of Financial Management.<sup>115</sup>

Twenty-four surveys were submitted, but one LHJ submitted two surveys from different school EH&S personnel, and one LHJ submitted both an incomplete and complete survey. We used the survey from the higher-ranking personnel and the survey that was complete. As described above, there was some inconsistency in response to the question: *Does your LHJ currently have a K-12 school EH&S inspection program that focuses on health and safety issues in schools (besides food safety)?* We attempted to correct for it by making most calculations about survey programs out of the 12 LHJs with a routine or developing program that answered “Yes” to the above question. This omitted the one LHJ that responded “Yes” but only reviews construction plans and the two LHJs with developing programs that responded “No” and were, therefore, not given the opportunity to answer the full survey tool.

While we sent the survey to environmental health directors at each LHJ, some surveys were completed by someone in a different position. There are likely differences in perspective between environmental health staff in an administrative role compared to those in a technical role.

Lastly, our survey was largely based on EPA’s *Model K-12 School Environmental Health Program*, which does not incorporate all areas of EH&S that our Washington state LHJs prioritize, such as playground safety.

*“This survey [based on the EPA Model Program] has been challenging as it is limited in focus and does not include important priority areas such as playground safety, operational issues (e.g., testing eye washes, providing equipment user instructions) or innovative curriculum issues (e.g., necessary ventilation for adding 3D printers). Many of the areas not included in the survey are as (or more) frequently addressed than those in the EPA model program.” – Routine program*

## Content analysis of regulations

Regulations pertaining to K-12 school environmental health vary significantly by state. Washington is one of a handful of states to have a comprehensive regulation specific to schools, overseen by a health agency. Other states, such as California, have numerous regulations pertaining to K-12 school environmental health. However, they are patchwork strategies, with oversight spread across multiple state agencies.

Twenty-seven states were identified as having one or more relevant policies. Based on our inclusion criteria, 13 state regulations were identified for review in addition to our own state’s two relevant regulations: Chapters 246-366 and 246-366A of the Washington Administrative Codes (WAC 246-366 and WAC 246-366A). Table 14 presents these regulations, including the oversight agency, date of implementation, and most recent update, if applicable. Twelve of 14 states have regulations overseen by the state’s health agency, and two states, New Hampshire and Oregon, have regulations overseen by those states’ Department of Education. New

Hampshire's regulation requires inspection by a local health official as a part of the school approval process, conducted every few years. While Oregon's Healthy and Safe Schools Plan does not require inspections, it was included due to its proximity to Washington, its relatively recent implementation (2017), and its novel requirement that schools develop their own Healthy and Safe Schools Plan (Box 11). All enforceable regulations reviewed were implemented or have been updated since 2002, except for Washington's implementable school code. Montana's regulation was updated most recently, in 2020. Notably, Washington's *Environmental Health and Safety Standards for Primary and Secondary Schools* (WAC 246-366A) is prohibited from being implemented until "the legislature acts to formally fund implementation."<sup>5</sup> West Virginia's General Sanitation Rule, which applies to other institutions as well as schools, was suspended as of 2020.<sup>116</sup> All regulations reviewed, except for Arizona's and Oregon's, cover public as well as private and religious schools. However, New Hampshire inspects public and private schools at different intervals, and Pennsylvania private schools are only inspected if requested by the state's Department of Environmental Resources.

## Inspection and remediation requirements

Eleven of the 15 regulations reviewed require school inspections by a local health official; however, the frequency of inspections and remediation requirements vary widely across regulations (Table 15). Of the regulations that require school inspections, Washington's enforceable regulation, WAC 246-366, and Pennsylvania's School Sanitation Program are the only two regulations to not specify inspection frequency; WAC 246-366 requires "periodic" inspections<sup>119</sup>, and Pennsylvania requires inspections "as often as necessary to maintain satisfactory compliance with applicable rules, regulations and standards..."<sup>120</sup> Of the 11 states that require school inspections, the frequency of inspections ranges from twice per year (Kentucky) to once every three to five years, depending on the type of school (New Hampshire; three years for private schools, five years for public schools). Five regulations require annual inspections, including WAC 246-366A, which is not enforceable.

### Box 11

## Oregon Healthy and Safe Schools Plan

In 2017, the Oregon State Legislature passed SB 1062, which requires school districts, ESDs, and public charter schools to adopt a Healthy and Safe Schools (HASS) Plan to address environmental conditions in all buildings where students and staff are present on a regular basis.<sup>117</sup> The plan must address all elements under ORS 332.331 (Healthy and Safe Schools Plan)<sup>118</sup> and may include additional elements relevant to that community. Parties were required to submit an initial HASS Plan to the Department of Education in 2019, and plan updates must be submitted annually if new buildings are acquired, constructed, or leased, or if the plan is modified by the district. The Oregon Department of Education published a model HASS Plan in 2019. Required plan elements include, but are not limited to, the following: identification of an individual responsible for maintaining and implementing the HASS Plan; a plan to test for elevated levels of radon, a plan to test for and reduce exposure to lead in drinking water, a plan to implement integrated pest management practices, and a plan to communicate test results to the school community.

Regulations are roughly split (7 of 15) on whether they require follow-up inspection and/or specify a timeline if corrective action is necessary. Six regulations require the health official to establish a specific and reasonable time period for corrective action if a violation is found. Colorado's regulation<sup>121</sup> allows the Department of Public Health and the environment to issue a compliance advisory if violations are identified, requiring schools to submit a Plan of Action to the department. Nevada requires all deficiencies indicated in an inspection report to be corrected within 30 days of the inspection, unless otherwise indicated on the report.<sup>122</sup>

Eight of 15 regulations contain consequences for noncompliance, including unannounced inspections (North Carolina), public notification of unresolved critical violations (Colorado), and possible school closure (multiple regulations). Rhode Island is the only state to require that schools receive an annual approval to operate.

*Rhode Island – R16-21-SCHO 22.1<sup>123</sup> ...it shall be the responsibility of each local fire chief, local building inspector, the Director of the state Department of Health, and the Director of the state Labor and Training Department to determine and notify each local school superintendent or non-public school official by August 1 of each year as to whether the...school buildings conform to appropriate state and federal laws and regulations within their respective jurisdiction.*

Common among all regulations is the responsibility of schools or school boards for corrective action.

## Regulation elements by activity category

Appendix C presents a complete checklist of regulation elements, and Table 16 presents a summary of regulation elements organized by health issue. The following results are organized by the categories identified as the *Five Key Components of a School Environmental Health Program* and *Additional Opportunities for Promoting Environmental Health in School Facilities* detailed in the *EPA Model K–12 School Environmental Health Program*.<sup>75</sup> Note: The research team reviewers agreed to code all activities relevant *only* to new construction and/or renovations in the section of the survey specific to new construction and renovation. As such, a regulation that has robust requirements for the ventilation of *new* buildings, but requires no updates to existing structures, would have those regulation elements captured only under “new construction and renovation,” not “HVAC.”

**Table 14: State K–12 School Environmental Health & Safety Regulations Reviewed**

State	Name of Regulation	Code	Oversight Agency	Type of Policy	Date Implemented	Most Recent Update	Notes
WA	Primary and Secondary Schools	Washington Administrative Code 246-366	Department of Health	Regulation	1971	1991	
WA	Environmental Health and Safety Standards for Primary and Secondary Schools	Washington Administrative Code 246-366A	Department of Health	Regulation	Passed 2009; not enforceable	NA	Implementation subject to WA state legislature providing funding to public schools in accordance with section 222 of the 2009-11 biennial operating budget, chapter 564, laws of 2009, and may be subject to future legislative requirements.
AZ	NA	Arizona Administrative Code Title 9, Article 7	Health Department	Regulation	2006	NA	Regulation does not cover private or religious schools.
CO	Rules and Regulations Governing Schools in the State of Colorado	6 Code of Colorado Regulations 1010-6	Department of Public Health and the Environment	Regulation	2015	2018	
IN	Sanitary Schoolhouse Rule	410 Indiana Administrative Code 6-51	Board of Health	Regulation	1985	2007	
KY	School Sanitation	902 Kentucky Administrative Regulations 45:150	Department of Public Health	Regulation	1984	2021	
MT	Montana School Health Rules	Administrative Rules of Montana 37.111.8	Department of Public Health and Human Services	Regulation	1986	2020	
NV	NA	Nevada Administrative Code 444.568 - 444.5682	Board of Health	Regulation	2002	NA	



**Table 14: State K–12 School Environmental Health & Safety Regulations Reviewed (Continued)**

State	Name of Regulation	Code	Oversight Agency	Type of Policy	Date Implemented	Most Recent Update	Notes
NC	Rules Governing the Sanitation of Public, Private and Religious Schools	15A North Carolina Administrative Code 18A .2400	Department of Health and Human Services	Regulation	1986	2002	
NH	Minimum Standards for Public School Approval	New Hampshire Administrative Rule Ed 306.07	Department of Education	Regulation	1982	2014	The School Health Inspection Manual, developed by the Department of Health and Human Services for use by local health officers, was reviewed.
OR	Healthy and Safe School Plan	Oregon Administrative Rule 581-022-2223	Department of Education	Regulation	2017	NA	Regulation does not cover private or religious schools. In addition to OAR 581-022-2223, Oregon Revised Code 332.331 and the Model Healthy and Safe Schools Plan, were also reviewed.
PA	School Sanitation Program	Pennsylvania Code 28.17.51; School Sanitation Program	Department of Health	Regulation	1979	2004	
RI	Rules and Regulations for School Health Programs	R16-21_SCHO; Part IV Healthful School Environment	Department of Health	Regulation	1964	2009	
UT	Design, Construction, Operation, Sanitation, and Safety of Schools	Utah Administrative Code R392-200	Department of Health	Regulation	1998	2018	
WV	General Sanitation Rule	West Virginia Code of State Rules §64-18	Bureau for Public Health	Regulation	2013; suspended as of 2020	NA	Regulation not specific to schools; applies to other institutions including recreational facilities, campgrounds, and motels.

**Table 15: Inspection Activities as Required by State K-12 School Environmental Health & Safety Regulations**

State	Frequency of regular inspections	Party responsible for inspections	Party responsible for corrective action	Follow up required	Follow up timeline specified	Enforcement mechanisms	Notes
WA [246-366]	"Periodic"	Department of Health	Schools				
WA [246-366A]	1x per year	Department of Health	Schools				Not enforceable
AZ	1x per year	Health Department	School's governing board				
CO	Min. 1x per year for schools with labs; 1x every 3 years for schools without	Department of Public Health and the Environment	Schools	Yes	As soon as possible or by date specified by the Department	Compliance advisory from Department; Plan of Action developed by school officials; enforcement action may include, but is not limited to, public notification of unresolved critical violations; prior to enforcement action, Department may schedule meeting with school officials to determine Plan of Action to bring school into compliance	
IN	Inspections not required	NA	NA				
KY	2x per year	Cabinet for Health and Family Services	Schools	Yes	Specific and reasonable period of time for the corrective action of each violation found, determined by member of the Cabinet	Failure to comply with any notice issued during inspection shall result in further action being taken; Cabinet shall report suspected noncompliance with applicable requirements of other state agencies to those agencies	
MT	1x per year	Department of Public Health and Human Services	Schools	Yes	Time schedule for compliance set by representative of Department or local health authority conducting inspection		

**Table 15: Inspection Activities as Required by State K-12 School Environmental Health & Safety Regulations (continued)**

State	Frequency of regular inspections	Party responsible for inspections	Party responsible for corrective action	Follow up required	Follow up timeline specified	Enforcement mechanisms	Notes
NV	Min. 1x per year	Board of Health	Schools	Yes	Within 30 days after the inspection unless otherwise indicated on inspection report	Health authority may notify the following parties of noncompliance: Department of Education; board of trustees of school district where school (public or charter school) is located; Superintendent of Public Instruction (if private school)	
NC	1x per year	Department of Health and Human Services	Schools	Yes	Only for schools that request resinspection to improve classification; unannounced resinspection occurs within 30 days after date of request	Schools classified based on score received during inspection and given a grade, scores of 70 or less are classified as unapproved; schools can request reinspection to improve their classification	
NH	1x every 3-5 years, depending on type of school	Department of Health and Human Services	Local school board	Yes	By date determined by local health officer	Department notifies local board of health if school is deemed to be a "menace," if after reasonable time period complaint has not been attended to, Department can order changes to the school building or condemn the school building	Private schools require inspection every 3 years, public and charter schools every 5 years
OR	Inspections not required	NA	NA				
PA	"As often as necessary to maintain satisfactory compliance with applicable rules, regulations, and standards..."	Department of Health	Schools			For public schools which are found to be noncompliant, a copy of the inspection report shall be sent to the Department of Environmental Resources (DER); for public schools that continue in noncompliance, after proper notice, DER will coordinate with Department of Education for abatement	Private schools only inspected if requested by Department of Environmental Resources
RI	Inspections not required	NA	Schools			School officials subject to sanction set forth in RIGL section 16-21-3.1 if school is noncompliant	

Table 16: Summary of State K–12 School Environmental Health and Safety Regulation Elements (continued)

State	Frequency of regular inspections	Party responsible for inspections	Party responsible for corrective action	Follow up required	Follow up timeline specified	Enforcement mechanisms	Notes
UT	Inspections not required	NA	Governing body of the school				
WV	1x every 2 years	Bureau for Public Health	Schools	Yes	Inspecting health officer determines timeline	Health officer may issue written order to operator requiring action to be taken; operator may request hearing; health officer may suspend or revoke permit to operate	Suspended as of 2020

Table 16: Summary of State K–12 School Environmental Health & Safety Regulation Elements

0-20%	21-40%	41-60%	61-80%	81-100%
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Regulation Elements	WA 246-366	WA 246-366A*	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV**
<b>Five Key Components of a School Environmental Health Program</b>															
<b>1. Practice Effective Cleaning and Maintenance</b>															
1a. Inspections; maintenance practices	2/6	3/6	1/6	3/6	1/6	3/6	3/6	2/6	2/6	2/6	0/6	2/6	1/6	1/6	2/6
1b. Cleaning practices	1/9	4/9	2/9	3/9	2/9	1/9	5/9	2/9	2/9	1/9	0/9	1/9	2/9	2/9	4/9
<b>2. Prevent Mold and Moisture</b>	2/10	6/10	0/10	1/10	3/10	1/10	2/10	1/10	1/10	1/10	0/10	1/10	0/10	1/10	4/10
<b>3. Reduce Chemical and Environmental Hazards</b>															
3a. Chemical and chemical-containing products	3/19	6/19	0/19	7/19	1/19	1/19	8/19	2/19	1/19	1/19	0/19	1/19	9/19	3/19	3/19
3b. Mercury	0/4	1/4	0/4	1/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	1/4	0/4	0/4
3c. PCBs	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	1/4	0/4	0/4
3d. Lead	0/2	0/2	0/2	1/2	0/2	0/2	0/2	0/2	0/2	1/2	1/2	0/2	1/2	0/2	0/2
3e. Asbestos	0/1	0/1	0/1	1/1	0/1	0/1	0/1	0/1	0/1	1/1	1/1	0/1	1/1	0/1	0/1
3f. Radon	0/4	0/4	0/4	1/4	0/4	0/4	0/4	0/4	0/4	1/4	2/4	0/4	3/4	0/4	0/4

Table 15: Inspection Activities as Required by State K-12 School Environmental Health &amp; Safety Regulations (continued)

Regulation Elements	WA 246-366	WA 246-366A*	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV**
3g. Drinking water; lead	3/14	7/14	2/14	4/14	3/14	3/14	11/14	4/14	5/14	5/14	4/14	1/14	3/14	2/14	5/14
3h. Outdoor air pollution	0/9	0/9	0/9	0/9	0/9	0/9	2/9	0/9	0/9	0/9	0/9	2/9	1/9	1/9	2/9
3i. Secondhand smoke	0/3	0/3	0/3	0/3	0/3	0/3	1/3	0/3	0/3	1/3	0/3	0/3	2/3	0/3	1/3
<b>4. Ensure Good Ventilation</b>	1/15	3/15	1/15	4/15	3/15	0/15	4/15	1/15	4/15	0/15	2/15	2/15	0/15	5/15	7/15
<b>5. Prevent Pests and Reduce Pesticide Exposure</b>	1/17	1/17	1/17	2/17	0/17	2/17	4/17	3/17	2/17	1/17	2/17	2/17	4/17	5/17	6/17
<b>Additional opportunities for promoting environmental health in school facilities</b>															
<b>New Construction and Renovation</b>															
School siting	1/2	1/2	0/2	0/2	1/2	0/2	1/2	0/2	0/2	0/2	0/2	2/2	0/2	1/2	1/2
Construction process; materials; IAQ; precipitation controls; design for pest reduction	1/12	3/12	0/12	1/12	0/12	1/12	2/12	1/12	0/12	0/12	1/12	1/12	1/12	1/12	4/12
Energy and water efficiency	0/4	0/4	0/4	0/4	1/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4	0/4
<b>Other opportunities</b>															
Classroom Comfort	3/4	3/4	0/4	3/4	2/4	2/4	2/4	2/4	1/4	1/4	0/4	2/4	2/4	3/4	3/4
Energy and Water Efficiency	0/17	0/17	0/17	0/17	1/17	0/17	0/17	0/17	0/17	0/17	0/17	0/17	0/17	0/17	0/17
Waste Management	0/7	0/7	1/7	3/7	1/7	1/7	2/7	1/7	1/7	1/7	0/7	2/7	1/7	1/7	1/7

\*Regulation not enforceable \*\*Regulation suspended as of 2020

For complete list of regulation elements, see Appendix C: State K-12 School Environmental Health and Safety Regulation Elements



## Five Key Components of a School Environmental Health Program

### Practice effective cleaning and maintenance

Fourteen of 15 regulations require schools to be kept clean; however, required cleaning activities vary widely among regulations. Notably, Oregon's regulation does not include any cleaning requirements, and Washington's enforceable regulation, WAC 246-366, specifies only that school officials shall "keep school facilities clean and in good condition."<sup>124</sup> Montana's regulation has the most robust cleaning requirements, requiring schools to conduct routine cleaning, use equipment properly to perform cleaning tasks, and store cleaning products in a manner that makes them inaccessible to students. Additionally, deodorizers and odor-masking agents are not permitted, and green cleaning products are to be used to replace older, conventional products when they require restocking. Rhode Island's is the only regulation to require up-to-date inventories of all cleaning products used. No state regulation requires vacuuming with HEPA filters.

### Prevent mold and moisture

Twelve of 15 regulations require activities related to the prevention of mold and moisture in school buildings. Washington's WAC 246-366A, which is not enforceable, has the most robust requirements, including routine inspection of school buildings for moisture problems and water damage, acting quickly to address leaks, and drying affected areas within 24 to 48 hours. WAC 246-366A requires schools to use recognized remediation procedures, such as those documented in the EPA's *Mold Remediation in Schools and Commercial Buildings Guide*, published in 2001.<sup>125</sup>

### Reduce chemical and environmental hazards

Four of 15 regulations, and just two enforceable regulations (Montana and Rhode Island), require proper use, storage, and disposal of chemicals. Three states (Colorado, Montana, and Rhode Island) require schools to develop a chemical hygiene plan. No regulation requires schools to develop a hazard communication plan, as is recommended by the *EPA Model Program*, though Montana's regulation requires schools to designate a chemical hygiene officer and to store safety data sheets in rooms where chemicals are stored and in a separate secure location (common components of a hazard communication plan). Rhode Island is the only state to require a chemical purchasing policy, and Colorado and Montana are the only states to require unused hazardous materials to be removed from the school with the assistance or guidance of a qualified professional.

Chemical hazards found in equipment and building materials, and those that are naturally occurring, are regulated to a similar or lesser extent than chemical and chemical-containing products. Oregon is the notable exception with no regulation of chemical and chemical-containing products, but robust requirements for the regulation of asbestos and radon. Colorado, New Hampshire, and Rhode Island also have requirements pertaining to asbestos and require testing for radon. Three regulations (Colorado, Rhode Island, and WAC 246-366A – not enforceable) regulate the use of mercury in laboratories, though none require mercury inventories or the replacement of unneeded mercury-containing products with mercury-free alternatives, as recommended by the *EPA Model Program*. Of the regulations we reviewed, Rhode Island is the only state to regulate PCBs, though the requirements are non-specific. The regulation requires schools to develop a chemical hygiene plan, which "shall include a prohibition on the use of the chemicals listed in Appendix A."<sup>94</sup> PCBs are listed among nearly a thousand other chemicals in their "Appendix A." The regulation prohibits such chemicals from being purchased by schools and are "prohibited from a school."<sup>126</sup>

New Hampshire is the only state to require the inspection and inventory of lead-based paint. However, all state regulations reviewed regulate lead levels in drinking water to some degree, except for WAC 246-366. Three regulations (Montana, New Hampshire, and WAC 246-366A – not enforceable) require testing for lead in drinking water taps at minimum every five years, which is the frequency of testing recommended by the *EPA Model Program*. The Washington State Legislature passed E2SHB 1139 in 2021, which requires lead testing and remediation in schools, to fill the gaps in WAC 246-266. Montana is the only state to require lead concentrations at all drinking water taps to be below 15 ppb, in line with current EPA action levels.<sup>127</sup> Four regulations (Montana, Oregon, West Virginia – regulation suspended, and WAC 246-366A – not enforceable) require schools to develop a plan for providing drinking water if contaminants are discovered, and three of those states require a lead reduction plan. Colorado, North Carolina, and New Hampshire are the only three states to require routine maintenance of drinking water infrastructure. Overall, Montana has the most robust requirements in this area.

Few states regulate outdoor air pollution via their school environmental health regulations. Only five states address this issue: Montana, Pennsylvania, Rhode Island, Utah, and West Virginia (regulation suspended). Rhode Island requires school bus schedules to be designed to minimize idling. Utah and West Virginia require intake vents to be located away from vehicular traffic. Montana is the only state to require schools to have a procedure for responding to air quality index advisories.

### **Ensure good ventilation**

Similar to other activity categories, ventilation requirements vary widely among regulations. Eleven of 15 regulations address ventilation (Kentucky, New Hampshire, and Rhode Island do not), and six of 15 regulations specifically require schools to have functioning ventilation systems. Montana, Utah, and West Virginia require regular system cleaning, and Arizona requires schools to have HVAC maintenance plans. Montana and Utah are the only states to require regular HVAC system inspections. Four states (Colorado, Indiana, North Carolina, and West Virginia – suspended) require school building outdoor ventilation to meet or exceed ASHRAE standards and/or local codes, and Utah and West Virginia require building air intakes to be located away from high vehicular traffic areas, plumbing and exhaust stacks, and chimneys for the school's heating system. Montana is the only state to require the implementation of new air ventilation, cleaning, and filtration technologies in their school code; the regulation requires the use of air filters with a MERV rating between 8-13, unless non-MERV-rated filters are used. Further, the regulation recommends that schools with ventilation systems using MERV-rated filters change to MERV-13 filters during periods of poor outdoor air quality.<sup>128</sup>

### **Prevent pests and reduce pesticide exposure**

Fourteen of 15 regulations address pest prevention and/or the reduction of pesticide exposure; however, three regulations (Arizona, WAC 246-366, and WAC 246-366A – not enforceable) require no specific activities. Montana, Oregon, and Utah require schools to develop and implement Integrated Pest Management (IPM) programs, which include protocols to reduce pest levels while minimizing risk to people and the environment. Despite not requiring IPM programs, three states (Colorado, Utah, and West Virginia – regulation suspended) require the use of pesticides that present the least risk of exposure, if pesticide use is necessary, and four states (Nevada, North Carolina, Utah, and West Virginia – regulation suspended) require pesticides to be stored in a secure location. Montana and West Virginia (regulation suspended) require pest prevention activities in areas beyond school buildings, including playgrounds, athletic fields, and parking lots. The Rhode Island regulation permits parents or guardians of students and

school staff to register for prior notice of all pesticide applications at their school and requires school authorities to provide school community members with a written statement on pesticide application policies.<sup>129</sup>

## **Additional opportunities for promoting environmental health in school facilities**

### **Classroom comfort**

Thirteen of 15 regulations address classroom comfort. Twelve of 15 regulations specify minimum lighting requirements, with some regulations differentiating minimum lumens by room use. Five of 15 regulations address acoustics, including both Washington regulations. Eleven of 15 regulations address temperature control, either relating to HVAC systems, water temperature, or both. Pennsylvania requires staff to be trained in HVAC use but does not regulate the temperature in school buildings.

### **Energy and water efficiency**

Indiana is the only state to address energy or water efficiency in its school environmental health regulation. Indiana's Sanitary Schoolhouse Rule requires "heating facilities be constructed, operated, and maintained for the efficient consumption and utilization of energy."<sup>130</sup>

### **Waste management**

Of the regulations we reviewed, all, save for Washington's and Oregon's, addressed waste management in some capacity. Of the regulations that do address the issue, most specify that waste bins shall be made of a durable and easily cleanable material, have tight-fitting lids, be accessible, and be emptied at least once per day. Colorado and Montana are the only two states to require schools to provide recycling bins, and Colorado is the only state to require that schools provide compost bins as well.

### **Construction and renovation**

Seven of 15 regulations oversee school siting activities. Montana, Pennsylvania, and Utah require environmental factors to be considered during the siting process. Eleven of 15 regulations regulate construction and/or renovation plans and procedures. WAC 246-366A (not enforceable) and Montana's regulation are the only two codes that explicitly require indoor air quality to be addressed during the design phase. Oregon is the only state to require contractors to follow EPA's Lead Renovation, Repair, and Painting Rules. The rules require renovations, repairs, and painting projects that may disturb lead-based paint to be conducted by EPA-certified contractors.<sup>131</sup> Montana and West Virginia (regulation suspended) require schools to incorporate precipitation controls in the design process, implementing features such as sloped roofs and landscaping to carry water away from buildings. West Virginia (regulation suspended) is the only state to require schools to incorporate pest prevention in the design phase of new buildings and renovations.

## **Limitations**

States vary significantly in their regulation of K-12 school EH&S. Some states, like Washington, regulate school environments primarily through a comprehensive school-specific code overseen by the state's health agency. Other states take a piecemeal approach, granting different agencies authority to regulate various hazards. Because we looked specifically at codes comparable to Washington's, we may have missed regulations that thoroughly regulate a particular issue or offer innovative enforcement mechanisms. Further research in this area may be beneficial, especially related to emerging hazards.

# Discussion

## PCB regulations, guidelines, and resources

### Washington schools compared to other states and best practices

Washington schools are regulated for PCBs under the federal TSCA rule, which does not have specific rules for school buildings. As is the case with almost all other states, Washington does not have any additional state rules for PCBs in buildings or for schools. Therefore, the way PCBs are addressed in Washington schools, from a regulatory perspective, is largely similar to how they are being addressed elsewhere in the country. Similarly, Washington does not provide its own guidance for addressing PCBs in schools, and instead refers to EPA's PCB resources. This leads to the question of whether the TSCA regulation and EPA guidance is sufficient to effectively address PCBs in schools and protect the health of school building occupants. The following is a discussion of the limitations of current rules and guidance, as well as barriers to compliance with these rules and guidelines and other challenges of addressing PCBs in schools.

### Knowledge of and resources for identifying and addressing PCB hazards

In discussions of awareness and knowledge around PCBs in Washington schools, some key informants said they had heard PCBs referred to as “an East Coast problem,” meaning there may be Washington school building owners or operators who do not think PCB hazards exist in their schools. Key informants also mentioned that if there was awareness of PCB hazards, it was typically around PCB light ballasts and not PCBs in building materials, which some of our informants believed are the more prevalent hazard.

Another area of insufficient knowledge cited by key informants is around PCB regulations. In particular, the regulatory authority for PCBs can be confusing, and awareness of TSCA requirements for spill cleanup, abatement and mitigation, and disposal may be lacking among school owners, operators, and staff who may be most likely to discover potential PCB hazards. And while some agency websites include PCB information as described above, very few provide specific actions to take regarding PCBs in schools other than the EPA.

Lastly, even if there is awareness of the potential for PCB hazards in schools, there may be competing priorities and scarce resources such as time, expertise, and funds for inspecting for PCBs, characterizing the hazard, and if identified, properly addressing the hazard. One key informant pointed out that there is no certification or specified training required by TSCA to address PCB hazards properly as there are for other environmental hazards such as lead and asbestos. There are also very few government-based PCB specialists to offer support to LHJs and schools in Washington.

## Authorized use of PCB-containing light ballasts

Many key informants said the continued authorized use of PCB-containing light ballasts is concerning, particularly as these fixtures are well beyond their intended lifespan and may be malfunctioning and releasing PCBs into the air without obvious signs to those using them. EPA guidance recommends removing all PCB-containing light ballasts in schools; however, as described above, we do not know whether or how many schools still have PCB-containing light ballasts in their buildings. Our interviews highlighted some barriers that schools may encounter if they do still have PCB-containing light ballasts. Key informants mentioned that some schools may be unaware of the hazards of PCB light ballasts or believe that they are no longer a problem as many PCB light ballasts had been replaced through energy efficiency efforts, when, in fact, some remain in use in infrequently occupied areas. Another barrier mentioned was the lack of time or in-house resources for schools to inspect their light ballasts and then follow up on any discoveries.

While there are two funding sources available for Washington schools to remove and replace PCB lights, very few schools had used these programs by the end of 2022. Possible reasons for this described by key informants were that for the Ecology program, schools must inspect and come up with a plan to apply for funds, which may be time-consuming, or they may not have in-house expertise or available approved contractors to do the work. It was also mentioned that state contract laws made development of an effective replacement grant program difficult.

## No testing requirements for potential exposures or in building materials

Another challenging element of the TSCA regulation is the lack of requirement to test for potential PCB exposures or PCBs in building materials. Without this requirement, key informants believed schools were unlikely to do so. An analysis of EPA PCB cases in schools in a 10-year span found that only one of 286 cases involved a proactive attempt to identify and address PCBs.<sup>97</sup> In the remainder of the cases, PCBs were discovered when testing had been done prior to renovation or demolition work to assess waste management needs, or in cases where school occupants had illnesses or symptoms that prompted an investigation.

One reason for not proactively testing is that if PCBs are found in building materials above 50 ppm, school building owners are required to remove, remediate, and dispose of those materials. As many of our key informants explained, this can be time-consuming and costly, and thus a significant barrier for schools to perform testing. Furthermore, we did not learn about any publicly available resources for schools to test for PCBs in our review, so schools are likely responsible for finding and paying contractors and labs for any testing performed. Some of our key informants mentioned that another reason schools may not want to test is the fear of negative publicity or litigation if PCBs are found, as has happened in several local and national cases.

## No testing requirement following abatement or mitigation work

There is also no testing requirement for sampling for PCBs in the air following a PCB abatement or mitigation project, meaning it does not have to be verified that the actions taken were effective in reducing PCB levels and exposures. Senator Markey's report also highlights two cases



where PCB concentrations in the air continued to be above guideline levels despite significant PCB abatement work following EPA guidance.<sup>97</sup> In these instances, one school in Massachusetts was demolished, and the other in Connecticut is no longer in use.

## Lack of sampling protocols

In various guidance documents, the EPA mentions that testing air or surfaces for PCBs can help characterize exposures and can be a step to verify whether interventions to reduce PCB exposures have been effective. While there are established EPA methods for taking and analyzing air and surface samples, there are no recommendations for general sampling strategies such as when, where, how long, and in what situations sampling for potential exposures may be useful. In our conversation with the current and former PCB coordinators for EPA Region 10, we learned that they are currently developing these types of sampling protocols specifically for schools and that this document will be available in early 2023.

## Limited reporting requirements

There are very few instances that apply to schools where reporting related to PCBs is required. As illustrated in Box 5, leaking light ballasts do not have to be reported as the “spill” is most likely less than the threshold for reporting under the Comprehensive Environmental Response, Compensation and Liability Act, and the spill is not to water or vegetable gardens or animal grazing land. There is also no requirement to report to or coordinate with the EPA before, during, or after spill cleanup efforts or PCB abatement and mitigation work. EPA guidance does recommend consulting with regional EPA PCB programs in these instances. Key informants mentioned in some cases, schools may be hesitant to contact government agencies for help for fear of citations or negative publicity and subsequent litigation.

## Local health jurisdictions and regulatory oversight

LHJ school programs ensure that children, teachers, school staff, and other community members are kept healthy and safe within school buildings. Of the 22 LHJs surveyed, only seven currently provide routine school program services, and nearly all felt their capacity and influence was limited by outdated codes and inadequate funding. A similar number of LHJs have programs in the development stages, and nearly all voiced the same concerns for their programs moving forward. Many without programs worry that they would not have the staff or funding to create a program if the Legislature requires regular inspections.

## Outdated codes and guidance documents

*“Since there is a proviso on WAC 246-366A, [our department] only uses it to facilitate or provide context to discussions, e.g., what was intended to be in the next iteration of the regulations, how certain terms were defined, etc.” – Routine program*

*“We are working with a 50+-year-old rule, and the Legislature refuses to fund and implement the new rule that is already over 10 years old.” – Developing program*

Overwhelmingly, in both the survey results and key informant interviews, participants enumerated the many ways in which outdated codes and guidance documents affect their ability to ensure a safe school environment. Washington’s enforceable code for K–12 school EH&S, chapter 246-366 WAC *Primary and Secondary Schools* (WAC 246-366), originally passed

in 1971 and was most recently updated in 1991. It is limited in scope relative to comparable state codes and federal guidance. Of the 13 enforceable state K–12 EH&S regulations reviewed for this report, all were implemented after or have been updated since 2002. When evaluating standards compared to the *EPA Model Program*, Washington’s enforceable code has numerous gaps and only provides for basic EH&S standards in school facilities.

In 2004, in response to complaints about mold, water quality, and indoor air quality in schools across Washington, the Washington State Board of Health began work to develop, with wide stakeholder involvement, the *Environmental Health and Safety Standards for Primary and Secondary Schools* (WAC 246-366A). The Board adopted these updated rules in 2009; however, due to budgetary concerns around K–12 funding, the Legislature adopted a proviso in the state supplemental operating budget (ESHB 1244) “prohibiting implementation until the Legislature acts to formally fund implementation.” The state’s supplemental operating budget, each year, continues to prohibit implementation of the rules, including (ESSB 5693) effective through June 2023.<sup>5</sup> LHJs can use these codes only to facilitate discussions with schools, but they cannot be enforced. WAC 246-366A is now over a decade old and has fallen behind current federal and state standards and guidance for various environmental health issues.

*Updated K–12 Guide, WAC 246-366-140, references the K–12 Guide (a DOH/OSPI document), so that is a higher priority for updating than the WAC. The L&I references are in particular need of an update. - Routine program*

The primary guidance document used to interpret applicable codes and control measures for identified hazards is the *Health and Safety Guide for K–12 Schools in Washington* (*Health & Safety Guide*). This guide was jointly developed and published in 2003 by DOH and OSPI and was required by WAC 246-366-140 to be created for use by LHJs “during routine school inspections in identifying violations of good safety practices. The guide should also include recommendations for safe facilities and safety practices.”<sup>132</sup> The 2003 *Health & Safety Guide* remains the most comprehensive school EH&S resource for LHJs and schools in

Washington. While an updated version of this guide was in preparation to accompany WAC 246-366A, it remains unpublished until this rule is implemented. It is currently undergoing technical corrections.

## Inconsistency in school EH&S program implementation

*“Since very few LHJs have a comprehensive program, those of us who do are sometimes looked upon as putting additional requirements on our schools. In addition, we are tasked with providing consultations and training to other LHJs, which takes staff time and funding.” - Routine program*

The stratified state of school program scope and capacity across Washington creates inequitable environmental public health service delivery. Students in jurisdictions without a school program presumably are not receiving the same level of health and safety oversight as those jurisdictions with a fully developed and implemented EH&S program. Schools left to manage their own EH&S may differ in effective implementation based on the school district’s knowledge and resources. In jurisdictions with an LHJ oversight program, schools may feel that undue burdens are placed upon them for health and safety management when compared to jurisdictions without. Additionally, our survey found that LHJs with full inspection-based programs were more likely to rely on WAC 246-366A for additional guidance than the developing programs. The influence

that updated EH&S guidance documents have on LHJ technical assistance and support to school districts is likely to further disparities in program implementation across the state.

In this report, we identified inconsistencies in the school inspection process across Washington. While school program presence or absence is the primary contributor to differences in inspection comprehensiveness, even programs that perform routine inspections differ in frequency, breadth, and depth. Both annual and alternative inspection frequency models were identified and advocated for by their respective LHJs. Alternative school inspection models include those such as Spokane Regional Health District's three-year rotation, giving schools the opportunity to self-inspect between LHJ inspections. States with recently updated regulations, such as Colorado (2018) and New Hampshire (2014), came to a similar conclusion. Colorado requires local health officials to inspect schools with labs annually, but all other schools are inspected by the local health department every three years.<sup>133</sup> New Hampshire requires inspections by a local health official as a part of its school approval process, which is required every three years for private schools and every five years for public schools.<sup>134</sup> A collaborative model can result in schools building their own risk management teams that, reportedly, reduce the financial burden on schools, improve school ability to identify hazards outside of LHJ inspections, and relieve staff and time burdens on LHJs.

In both our interviews and survey results, we observed significant variation in the type of inspection checklist used across programs in the state, including the use of no checklist at all. This is due in part to the minimum standards for school EH&S set by WAC 246-366 and the lack of an explicit requirement to use a survey tool. Meanwhile, the *Health & Safety Guide* serves as a surrogate checklist for LHJs that choose to use it, though inspectors are not required to use the guide during inspections. Setting clear, comprehensive expectations for both the health agency and the school via a universal inspection checklist has been accomplished in other states, like New Hampshire. The New Hampshire Department of Education has published a standardized form to be used to complete all school inspections, creating continuity and clear expectations for schools and inspecting officials. The instructions for inspecting officials, published by the Department of Health and Human Services, also include the materials inspectors are to have on hand to complete the inspection.<sup>135</sup>

## Inadequate regulatory capacity to address existing and emerging hazards

Washington is not currently positioned to adequately address existing or emerging hazards, require known efficacious control methods, or apply new knowledge affecting technical assistance, in part because of the prohibition on implementation of WAC 246-366A and the lack of statewide program implementation. The top five cited existing hazards during school inspections, according to LHJs surveyed, were chemical hazards in the lab, lighting, playground hazards, unsafe conditions including hazardous maintenance conditions, and HVAC issues or poor air quality. Lighting is the only one of these that is thoroughly covered in WAC 246-366. The other top hazards are only briefly mentioned in the code or not covered at all, like playground safety. Additionally, hazards important to the scope of this report, such as lead, PCBs, asbestos, radon, and mercury-containing products, are not directly referenced in the currently enforceable code.

When a hazard is identified during an inspection, surveyed LHJs frequently described challenges with school corrective action for issues beyond the current standards set by WAC 246-366. LHJs report attempting to persuade or encourage schools to remediate known hazards in the absence of being able to cite a specific code. Lack of clear, updated regulatory guidance

results in extended back-and-forth discussion between LHJs and schools. Survey responses and interviews also revealed LHJ interest in guidance that includes a clear time frame for resolution, such as those for pool or food inspections, that are based on current best control practices.

WAC 246-366A takes steps toward addressing some of these shortcomings, including chemical hazards related to laboratories and cleaning activities, playground safety, drinking water hazards such as lead and copper (although action levels are outdated), and indoor air quality concerns, including mold and moisture. However, the updated Washington code regulates existing structures differently from new construction and renovations. The code is more comprehensive for new and renovated buildings, addressing various health issues such as ventilation and playground safety in greater depth. Regulations for existing structures are more limited in scope. As such, students in existing buildings may not benefit from the updated code. Other shortcomings of both WAC 246-366 and WAC 246-366A include a lack of descriptive control methods to prevent and mitigate health issues in school buildings. Additionally, neither of these codes prepares schools for emerging hazards, such as wildfire smoke, emerging diseases, and new technologies.

The lack of updated and implementable codes has led to a piecemeal legislative approach in addressing important health and safety concerns for the state's schools. One example of this approach has been the passage of Engrossed Second Substitute House Bill (E2SHB) 1139, an act to address testing and remediation requirements for lead in school drinking water outlets.<sup>136</sup> Many of the requirements in E2SHB 1139 are included in WAC 246-366A, albeit the existing lead action levels are out of date.

Conversely, Montana, Colorado, New Hampshire, Oregon, and Rhode Island all have codes that stand out for their approach to addressing present and emerging environmental health hazards. For example, Montana's regulation addresses wildfire smoke in their ventilation and filtration standards. These states also stand out for the mechanisms by which they oversee school EH&S and have implemented innovative tools designed to support capacity-building among schools and school districts and to ensure continuity across school EH&S program delivery, thereby increasing their capacity to respond to emerging concerns. Additionally, while many of the state codes reviewed require routine inspections, Colorado, Kentucky, and New Hampshire stand out by providing additional guidance for "post inspection," including a timeline for follow-up if corrective action is deemed necessary and detailed consequences for noncompliance. Each of these regulations require violations identified during inspection to be corrected within a reasonable time frame, as determined by the local health official or the health department.

If violations are not corrected within the stated time frame, each code specifies additional enforcement steps that may be taken.

## Equitable funding

Budgetary constraints ranked as the top barrier for LHJs implementing a school program and for schools carrying out recommendations. Funding was also by far the number one facilitating factor for a successful school program and one of the top needs from legislators. Each of our interviews with LHJs revealed that Foundational Public Health Services funds have been instrumental for LHJs developing a new program or building capacity for an existing program. However, the interviewees also explained that this money is strictly earmarked for certain usages and cannot be used to replace existing fees for inspections, which creates inequities in program implementation across the state.

Funding and staffing issues also heavily affect schools. According to our interviews, LHJs report schools struggle to improve health and safety for students and staff without the appropriate resources to correct identified hazards.

# Recommendations

## PCB regulations, guidelines, and resources

In considering potential solutions and next steps for PCB hazards in schools, feasibility should be a key factor in decision-making. We recognize that implementing solutions may be challenging due to existing regulations, lack of funding and expertise, and the need for cooperation with school districts and other stakeholders.

Many of our recommendations can be grouped into two different solution strategy categories. The first strategy assumes PCBs are present in schools of a certain age and moves directly into implementing known efficacious interventions to address PCB hazards. The other strategy is to first characterize and quantify PCB hazards in Washington schools, then take actions specific to those findings.

### **Solution strategy 1: Assume PCB presence and implement known efficacious interventions.**

#### **Require removal of PCB light ballasts**

Removing PCB light ballasts is one of four actions the EPA recommends for schools and is relatively uncomplicated compared to other potential interventions. As described earlier, there are already resources for addressing PCBs in light ballasts in the form of practical guidance from the EPA as well as two state-level programs that offer funding for replacement. To facilitate efforts related to such a requirement, the state could remove contract barriers; fund trained contractors to identify, remove, and properly dispose of materials; fund trained school-designated personnel to identify, remove, and properly dispose of materials; and/or create a more streamlined disposal process, such as offering pick-up of PCB light ballasts.

#### **Support cleaning and ventilation best management practices**

Another approach would be to establish, and fund, required cleaning, ventilation, and filtration practices that are known to be effective in reducing PCB exposure. These procedures also have the co-benefit of being effective at reducing other potential chemical and microbial exposures and improving indoor air quality generally. As seen in Box 12, improved indoor air quality has been associated with improvements in health and academic performance. Resources might include funding and expertise for evaluating, updating, and maintaining ventilation and filtration systems and support for green cleaning supplies, equipment, and increased custodial personnel necessary for conducting cleaning activities described in EPA recommendations.

#### **Support schools with expertise, information, and outreach opportunities**

As described above, there may be a lack of awareness and information about PCB hazards in schools. The state could engage in capacity-building in these areas to ensure school owners and operators are aware of their responsibilities related to PCBs, and to have expertise available to schools wanting or needing to investigate or address PCBs in their buildings. This could include outreach efforts to school owners and operators to inform them of PCB hazards and regulatory requirements; developing more specific guidance and clarification around regulatory requirements in Washington; providing more guidance and training to LHJ school inspectors on PCB hazards; and funding more indoor air quality, industrial hygiene, or environmental health specialists at the state, regional, or local levels to consult with schools about PCB issues.



## **Require testing of building materials for PCBs prior to school construction projects**

A requirement to test and remove PCB-containing building materials before starting school renovation or demolition work is another EPA recommendation and is also an approach taken by Connecticut and the University of Washington. With this approach, schools may need technical support as well as funding to conduct the testing. Consideration would also need to be made for increased costs related to proper removal and disposal of PCB materials, safe PCB work practices, and potential PCB contamination of soil or other environmental media around building exteriors. Other elements found in the Asbestos Hazard Emergency Response Act could also be considered, such as hazard management plans and recordkeeping.

## **Solution strategy 2: Characterize and quantify PCB hazards in schools, then implement interventions.**

### **Conduct a study to assess the presence and extent of PCB hazards in schools**

One strategy would be to carry out a study of sufficient power to suitably characterize PCB presence in Washington schools to guide future interventions. Study aims could be to: estimate the presence of PCB light ballasts in schools; estimate the number of schools with building materials containing PCBs  $\geq 50$  ppm; characterize materials containing PCBs (identification of materials, measuring PCB concentrations); characterize potential PCB exposures to occupants of school buildings; and/or other aims to identify the presence and extent of PCB hazards or exposures.

### **Require inspection and testing for PCBs in schools**

Another strategy would be to create a rule similar to Vermont's, where inspection and testing would be required for all school buildings built or renovated in a certain time frame (e.g., prior to 1980). Planning for a regulation like this would need to consider funding, expertise, and personnel needs for completing the inspections and testing and should also consider potential expenses for abatement and mitigation work if PCBs are found in indoor air or building materials.

## **Box 12**

### **Impact of school indoor air quality on children's health and performance**

Poor indoor air quality (IAQ) can be caused by lack of proper ventilation and filtration of indoor spaces, leading to the accumulation of air pollutants, mold, chemicals, and fumes that can be harmful to occupants. Temperature and humidity are also important factors that, when not regulated properly, can allow for mold growth. Carbon dioxide concentrations are a good indicator for IAQ as it is used to measure ventilation as a percentage of outside air in a building.<sup>137</sup>

#### **Why is it important?**

According to the EPA, indoor air pollution is one of the top five environmental risks to public health,<sup>138</sup> as children and adults spend up to 90% of their time indoors.<sup>139</sup> Without adequate IAQ in schools, students and teachers are subject to multiple health risks that range from "sick

building syndrome” to a higher frequency of asthma attacks, especially for children whose developing bodies may be more susceptible.<sup>138</sup> Asthma is the leading cause of absenteeism in schools due to chronic illness, and about 1 in 13 school-age children suffer from it.<sup>138</sup> The presence of mold, dust mites, and pests—common school allergens— can trigger or worsen asthma symptoms.<sup>138</sup> Other individuals with respiratory diseases, suppressed immune systems, or even those who wear contact lenses are also more susceptible to indoor air pollutants,<sup>138</sup> taking time, energy, and focus away from learning.

### In the literature

Much of the literature surrounding IAQ in schools has shown significant correlations between good IAQ and student performance. In a literature review of cross-sectional and intervention studies on ventilation rates in schools and student performance, eight out of 11 studies found “statistically significant improvements in at least some measures of performance with increased ventilation rates or lower carbon dioxide concentrations.”<sup>140</sup> Some studies looked at performance measures such as speed and accuracy in addition, multiplication, proofreading, and logical thinking, while others analyzed attendance rates and even nasal patency—an indicator of nasal openness—as their response measure.<sup>140</sup> The overwhelming majority of the results correlated their measure of performance with carbon dioxide concentrations. The strongest study included in the review followed 162 classrooms over two years and reported a “1.6% decrease in absence for each 1 liter/second/person increase in ventilation rate.”<sup>140</sup>

High carbon dioxide concentrations have been attributed to causing symptoms such as headaches, tiredness, and difficulties in concentrating.<sup>141</sup> Multiple other studies in the US and UK have found direct correlations between classroom ventilation rates and student academic performance through increased standardized test scores. These studies also found a reduction in cognitive performance in classrooms with higher levels of carbon dioxide and particulate matter.<sup>142</sup>

### Solutions

In a school setting following the COVID-19 pandemic, students, families, and teachers are more aware of and concerned with IAQ. It is important that they have the knowledge and tools to feel empowered to protect their health from not only infectious diseases but from common air pollutants as well. Improving a school’s IAQ can be as simple as opening windows or doors if the weather permits or using fans to circulate air in and out of classrooms.<sup>139</sup> IAQ sensors can be used by teachers to assess the state of their classrooms throughout the day.<sup>143</sup> Simply installing or improving air filters for PM (particulate matter) 2.5 can prevent harmful air pollutants from entering classrooms and has been shown to reduce incidences of asthma.<sup>142</sup> A study performed by Brown University in California’s San Fernando Valley confirmed an increase in student performance only one year after local authorities ordered the installation of air filters in schools.<sup>142</sup>

## Local health jurisdiction and regulatory oversight

Washington can address equity within school EH&S implementation while positioning itself to be ready for emerging hazards or EH&S concerns. The following policy solutions focus on using evidence-based science to guide an update of codes and guidance documents, as well as on building EH&S capacity across the system. We again recognize that there may be challenges related to funding, availability of expertise, and the cooperation of school districts and other stakeholders.

## Eliminate the implementation suspension proviso in the upcoming supplemental state operating budget

One substantial solution the Legislature could choose is to discontinue adopting an “implementation suspension” in the upcoming state operating budget. Allowing the current proviso to lapse would result in the “new” chapter 246-366A WAC *Environmental Health and Safety Standards for Primary and Secondary Schools*, to enter into effect on August 1, 2023.<sup>5</sup> The implementation of WAC 246-366A would expand school health and safety to include a wider range of hazards and current control measures, including concerns identified by the Legislature (the genesis of this report). The importance of this recommendation was communicated to us in every LHJ and PCB-related interview, as well as throughout the survey. It is important to note that none of the Legislature’s stated hazards of concern (including PCBs, lead, asbestos, or mold) are addressed in the existing WAC 246-366 but are in WAC 246-366A.

## Update chapter 246-366A WAC using evidence-based science to identify priority hazards, effective control methods, and needed training and technical assistance opportunities

The “new” chapter 246-366A WAC was adopted 13 years ago and is out of date for a number of existing (e.g., lead) and emerging (e.g., 3-D printers, wildfire smoke, etc.) hazards. Updating these codes using an evidence-based approach to identify and prioritize common existing and emerging hazards and associated best control practices will help to focus both school district and LHJ limited resources on what really impacts health and safety in schools. Further study is needed to elucidate priority hazards in Washington schools and identify appropriate efficacious controls. One solution would be to conduct a retrospective study, examining past inspection data from LHJs and follow-up corrective actions taken by school districts. Another approach would be to conduct a cross-sectional study using a validated survey tool in participating schools to quantify consistently identified hazards, along with control strategies used by school districts. A final approach would be to use illness and injury data collected by schools to identify impacts from hazards found in school buildings and grounds (e.g., playgrounds). It is important to note, however, that continued flexibility for program implementation will be important to those LHJs with existing collaborative relationships with schools.

## Update the *Health and Safety Guide for K-12 Schools in Washington* (2003)

This study identified the *Health & Safety Guide* as one of the top resources used by LHJs to guide hazard identification and best practices for controlling those hazards. This guidance document is nearly 20 years old and is based predominately on the content contained within WAC 246-366. If WAC 246-366A is allowed to become effective in 2023, this guide will need substantial revision and is required by WAC 246-366A-015. Additionally, this guidance document, regulated under WAC 246-366A-015(a), will need to be updated every four years. Regardless of WAC status, the Legislature could choose to initiate and fund an update to the existing guidance document. While the guide itself would not be enforceable, it could better outline current best control practices for priority hazards and provide recommendations for school health and safety, setting clear and consistent expectations for school health and safety across the state. It is important to note that this guide, although 20 years old, is still the top resource used by LHJs for program

implementation and for guidance related to indoor air quality, hazardous chemical guidance, and pest control. Updating the *Health & Safety Guide* was consistently identified as one of the top facilitators to EH&S program implementation.

## **Invest in school health and safety at all levels: DOH School Program technical expertise, ESDs, LHJs, and school districts**

While the scope of this study did not include a cost-benefit analysis of impact from various legislative solutions, it did document the overwhelming sentiment of funding needs across the system. Funding and resources for capacity topped the list of concerns for LHJs seeking to develop programs, as well as those committed to sustaining their services. Federal, state, and local key informants all spoke of the need to fund remediation and control activities in both private and public schools and to eliminate contract barriers that impede efficient interventions.

It is reasonable to assume that any proposed improvements in EH&S program implementation (defined broadly) as well as addressing PCBs in schools will require resources currently undirected toward the EH&S system. It is also reasonable to assume unfunded mandates will not produce the expected results. A logical next step would be to convene a stakeholder group to advise on equitable funding needs, allocations, and solutions, given that all who are involved with the K–12 EH&S system have likely contemplated ways to reduce barriers, streamline service delivery, and leverage existing collaborations.

# Conclusion

This report identified that Washington is not currently positioned to address existing or emerging environmental health hazards in our schools. PCB-containing building materials are a concern facing school EH&S, but other hazards exist and should not be ignored. The suspension on implementation of WAC 246-366A, funding constraints, and a consistent program implemented statewide, are among the current barriers to addressing the school EH&S problem. This is a problem with known solutions that have been successfully used in other states and that could readily be adopted in Washington. Additionally, many recommendations in this report offer co-benefits that positively affect children's health and school performance, such as cleaning and ventilation best management practices. While individual solutions exist, we recommend a risk-based approach focusing on evidence-based science to address school EH&S. By using a comprehensive approach, Washington can ensure equity within school EH&S implementation while positioning itself to be ready for the next emerging hazard or EH&S concern for school building occupants.



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# Appendices

## Appendix A: Vermont's PCBs school regulation

### Background

Prompted by the discovery of elevated PCB levels in Burlington High School, Vermont established a rule in 2021 requiring all public and independent schools built or renovated before 1980 to have indoor air tested for PCBs.<sup>96</sup> The Vermont Department of Health developed School Action Levels for PCBs in indoor air in schools, which the Vermont Department of Environmental Conservation (DEC) has the authority to enforce. DEC has contracted with consultants to conduct the sampling and created a schedule that will have all affected schools sampled by 2025. One news article about the rule stated priorities for testing included schools with younger children and schools built between 1950 and 1979, when PCBs were most commonly used.<sup>144</sup>

### Sampling and follow-up actions

Consultants conduct a pre-sampling inspection and compile an inventory of materials potentially containing PCBs. A sampling plan is then developed and approved by DEC, and sampling is conducted in the schools. Sampling results are submitted to DEC and are subsequently shared with the Vermont Department of Health (DOH) and the EPA. Schools receive a joint letter from the DOH and DEC with results and any next steps, which may include implementing best management practices, identifying and addressing PCB exposure sources, and relocating building occupants to prevent or minimize exposure. Areas with results exceeding the Immediate Action Levels can no longer be used. If results exceed the School Action Levels, DOH recommends several occupancy scenarios to use while schools work with the state to address exposures.

### Development of School Action Levels

The Vermont Department of Health published a document detailing the development of School Action Levels.<sup>85</sup> A Screening Value for PCBs had been previously established in 2013 and is defined as “the chemical concentration below which no additional actions are recommended.” This value is meant to be protective of both cancer and non-cancer effects for school building occupants of all ages and sets the cancer risk to 1 excess cancer per 1 million people exposed. This value was initially considered for use as the School Action Level, but there were concerns with the screening value being too close to background values for PCBs in indoor air (defined as 22.5 ng/m<sup>3</sup>)<sup>145</sup>, which they believed would make it difficult to identify and address PCB sources. Thus, the School Action Levels, which are higher than the PCB Screening Value and based on the age of occupants, were created to prioritize the need for action. The School Action Levels accept a higher cancer risk -- 6 extra cases per 1 million people exposed (assuming a 30-year exposure duration and exposures of 9.75 hours per day and 235 days per year). Immediate Action Levels were defined as three times higher than the School Action Levels, though the development process of these levels was not described in the document or elsewhere.



Table A1: Vermont indoor air threshold levels for schools (ng/m³)

	All ages		
Screening Level	15		
	Pre-Kindergarten	Kindergarten to Grade 6	Grade 7 to Adult
School Action Level	30	60	100
Immediate Action Level	90	180	300

Funding

An initial \$4.5 million was allocated to conduct the indoor air sampling in the 327 schools built or renovated before 1980. Despite giving DEC authority to require schools to take action if PCBs are found above the School Action Levels, the legislation did not specifically provide funding for schools to address PCB hazards. After initial sampling, potential costs could include additional consulting needs to identify and test materials for PCBs and work to abate or mitigate the PCB hazards found, or for sampling after any abatement or mitigation work to verify effectiveness. There is an additional \$32 million in the state’s education fund set aside for schools to address PCBs, but decisions have not been made as to how it will be allocated.<sup>146</sup> Some \$2.5 million of that fund can be used for “significant health threats” due to PCBs, but so far, the Vermont Emergency Board has not released any of those funds to schools.

Perspectives of program staff

We interviewed three staff members working on this program from DEC and DOH for their perspective on the rule, program development, and implementation. They explained that the political disposition of state government and budget resources in Vermont made for straightforward rule development and considerable cooperation from schools. They also cited the importance of collaboration with schools and facilities staff to facilitate efficient and effective sampling work and to promote cooperation and trust. In particular, they stated working closely with custodial staff was critical to ensuring thorough inspections and PCB inventories as they often have some of the best knowledge of school operations and layouts.

Now that the program has been developed and sampling has begun in schools, they’ve found that there is a significant amount of work to support schools and building occupants in understanding results and potential implications. Program staff were concerned that schools with results above School Action Levels may feel underprepared to address the hazard and make risk-based decisions and may want more technical advice and definitive guidance. Program staff expressed that additional technical staff would be beneficial to address these needs. Another consideration is that because PCBs hadn’t been regulated in buildings or indoor environments in this way, there was limited existing PCB expertise within state agencies and among potential consultants to conduct the sampling.

The staff emphasized that starting a brand-new regulatory program is a significant undertaking, and that some issues have arisen that were not anticipated during rule development. They suggested a pilot program may clarify needs for staffing and expertise, as well as enforcement implications and burdens on schools (i.e., potentially extensive state or federal remediation requirements following certain findings).

## Findings as of November 2022

Sampling results are publicly available via the program webpage. As of November 2022, results were available for seven schools. As seen in Table A2, only two schools with available results have samples above the School Action Levels. In one school, one area had a concentration higher than the Immediate Action Level, meaning the space could no longer be used (a stage in a gym, at 210 ng/m<sup>3</sup>), and three additional areas had results above the School Action Level (a gym at 110 ng/m<sup>3</sup>, a locker room at 77 ng/m<sup>3</sup> and an art room at 120 ng/m<sup>3</sup>). The other school had three samples above the School Action Level (three kindergarten rooms ranging from 95- 120 ng/m<sup>3</sup>).

**Table A2: Vermont Schools PCBs sampling results (ng/m3)**

School	Samples above IAL	Samples higher than SAL, less than IAL	Samples higher than background values, lower than SAL	Samples higher than detection limit, but lower than background	Samples lower than detection limit	Total samples
School A	1	3	8	6	21	39
School B	0	3	0	1	20	24
School C	0	0	3	20	2	25
School D	0	0	0	20	2	22
School E	0	0	0	11	13	24
School F	0	0	0	7	19	26
School G	0	0	0	0	19	19

*\*Field blanks, outdoor samples, and samples marked as duplicates were not included in counts*

*\*\*Results available as of 11/20/2022*

# Appendix B: PCB Resource Lists

Table B1: Summary of publicly available PCB information on Washington state webpages

WEBPAGE	CONTENT	DOCUMENTS	LINKS TO EXTERNAL RESOURCES
WA Department of Health			
<a href="#">PCBs homepage</a>	General info Health effects, Sources/exposure Exposure reduction, Environmental fate		<a href="#">EPA PCBs homepage</a> <a href="#">EPA Fact Sheet: Practical actions for reducing exposure to polychlorinated biphenyls in schools and other buildings</a> <a href="#">PEHSU PCBs webpage</a>
Ecology			
<a href="#">PCBs homepage</a>	General info Health effects Sources/exposure Ecology work addressing PCBs	<a href="#">PCB Chemical Action Plan</a>	
<a href="#">PCBs in building materials page</a>	PCBs in building materials – background, regulations Ecology efforts to reduce PCBs in building materials	<a href="#">Guide “How to find and address PCBs in building materials”</a> <a href="#">Guide “How to estimate abatement project costs”</a> <a href="#">Polychlorinated Biphenyl Dangerous Waste Guide</a> <a href="#">Focus On: PCBs in building materials</a>	<a href="#">EPA Fact Sheet: PCBs in building materials</a>

Table B1: Summary of publicly available PCB information on Washington state webpages  
(Continued)

WEBPAGE	CONTENT	DOCUMENTS	LINKS TO EXTERNAL RESOURCES
<a href="#">PCB light replacement in schools program page</a>	<p>Background on PCB light ballasts, identification</p> <p>Hazards/health effects</p> <p>Exposure reduction strategies</p> <p>Information/application for product replacement program</p> <p>What to do with a leaking PCB light ballast</p>	<a href="#">Fluorescent Light Ballast Replacement Application</a>	<p><a href="#">PEHSU PCBs webpage</a></p> <p><a href="#">EPA PCBs homepage</a></p> <p><a href="#">EPA Fact Sheet: PCBs in building materials</a></p> <p><a href="#">EPA Fact Sheet: PCBs in Fluorescent Light Ballasts</a></p> <p><a href="#">DOH PCBs homepage</a></p>
<a href="#">PCBs in Schools blog post</a>	<p>Ecology efforts to address PCBs in schools</p> <p>PCBs in building materials info, link to report &gt;50ppm</p> <p>PCBs in light ballasts info, link to product replacement program</p>		<a href="#">EPA Fact Sheet: PCBs in building materials</a>
<b>EPA Region 10</b>			
<a href="#">PCBs Program page</a>	<p>PCB Cleanup sites</p> <p>PCBs in building materials</p> <p>PCB waste management</p> <p>PCB Coordinator Contact information</p>		<a href="#">Ecology Guide "How to find and address PCBs in building materials"</a>
<b>OSPI</b>			
<a href="#">T-12 Lighting Grant page</a>	No PCB info		

Table B1: Summary of publicly available PCB information on Washington state webpages  
(Continued)

WEBPAGE	CONTENT	DOCUMENTS	LINKS TO EXTERNAL RESOURCES
Seattle & King County Public Health			
<a href="#">PCBs homepage</a>	General info health effects, Sources/exposure		
Spokane Regional Health District			
<a href="#">Protecting Spokane's Water – PCBs</a>	PCB sources		

Table B2: Summary of resources available on the EPA [Polychlorinated Biphenyls \(PCBs\) website](#)

Type	Title	Date of publication	Pages	Contains information specific to schools?
General PCB information				
Webpage	<a href="#">Polychlorinated biphenyls (PCBs)</a>	2022		No
Webpage	<a href="#">Learn about polychlorinated biphenyls</a>	2022		No
Webpage	<a href="#">Policy and guidance for polychlorinated biphenyl (PCBs)</a>	2022		No
Document	<a href="#">PCB question and answer manual</a>	2014	134	No
Webpage	<a href="#">EPA regional polychlorinated biphenyl (PCB) programs</a>	2022		Yes
PCB-containing fluorescent light ballasts				
Webpage	<a href="#">Polychlorinated biphenyl (PCB)-containing fluorescent light ballasts (FLBs) in school buildings</a>	2022		Yes
Document	<a href="#">Fact sheet: PCBs in fluorescent light ballasts</a>	2020	5	No
Document	<a href="#">Chart: TSCA storage disposal requirements for fluorescent light ballasts</a>	2015	1	No
PCBs in building materials and indoor air				
Webpage	<a href="#">Polychlorinated biphenyls (PCBs) in building materials</a>	2022		
Document	<a href="#">Fact Sheet: PCBs in building materials</a>	2021	7	No
Document	<a href="#">Fact Sheet: Practical actions for reducing exposure to polychlorinated biphenyls in schools and other buildings</a>	2015	4	Yes
Document	<a href="#">PCBs in building materials - questions and answers</a>	2015	18	Yes



Table B2: Summary of resources available on the EPA [Polychlorinated Biphenyls \(PCBs\) website](#) (Continued)

Type	Title	Date of publication	Pages	Contains information specific to schools?
Webpage	<a href="#">Exposure levels for evaluating polychlorinated biphenyls (PCBs) in indoor school air</a>	2022		Yes
Document	<a href="#">Science in Action: Polychlorinated biphenyls (PCBs) research overview</a>	Unknown	2	Yes
Document	<a href="#">Science in Action: Laboratory study of polychlorinated biphenyl (PCB) contamination in buildings: Emissions from selected primary and secondary sources</a>	Unknown	2	No
Research Report	<a href="#">Laboratory study of polychlorinated biphenyl (PCB) contamination and mitigation in buildings: Part 1. Emissions from selected primary sources</a>	2011	127	Yes
Research Report	<a href="#">Laboratory study of polychlorinated biphenyl (PCB) contamination and mitigation in buildings: Part 2. Transport from primary sources to building materials and settled dust</a>	2012	166	Yes
<b>PCB mitigation and abatement for building materials</b>				
Webpage	<a href="#">Steps to safe renovation and repair activities</a>	2022		Yes
Webpage	<a href="#">How to test for PCBs and characterize suspect materials</a>	2022		Yes
Webpage	<a href="#">Steps to safe PCB abatement activities</a>	2022		No
Webpage	<a href="#">Summary of tools and methods for caulk removal</a>	2022		No
Document	<a href="#">Science in Action: Laboratory study of polychlorinated biphenyl (PCB) contamination in buildings: Evaluation of the encapsulation method</a>	Unknown	2	No
Research Report	<a href="#">Laboratory study of polychlorinated biphenyl (PCB) contamination and mitigation in buildings: Part 3. Evaluation of the encapsulation method</a>	2012	108	Yes

Table B2: Summary of resources available on the EPA [Polychlorinated Biphenyls \(PCBs\) website](#) (Continued)

Type	Title	Date of publication	Pages	Contains information specific to schools?
Research Report	<a href="#">Laboratory study of polychlorinated biphenyl (PCB) contamination and mitigation in buildings: Part 4 Evaluation of the activate metal treatment system (AMTS) for on-site destruction of PCBs</a>	2012	82	Yes
Research Report	<a href="#">Literature review of remediation methods for PCBs in buildings</a>	2012	68	Yes
<b>Site cleanup and remediation waste</b>				
Webpage	<a href="#">Managing remediation waste from polychlorinated biphenyls (PCBs)</a>	2022		No
Document	<a href="#">Facility Approval Streamlining Toolbox</a>	2017	56	No
Document	<a href="#">Standard operating procedure for sampling porous surfaces for PCBs</a>	2011	15	No
Document	<a href="#">PCBs sampling guidance for Subparts M, O, P, and R</a>	Unknown	28	No
Document	<a href="#">Verification of PCB spill cleanup by sampling and analysis</a>	1985	74	No
Document	<a href="#">Field manual for grid sampling of PCB spill site to verify cleanup</a>	1986	55	No
Document	<a href="#">Wipe sampling and double wash/rinse cleanup</a>	1987	31	No

*a: For documents, date listed is date of publication. For webpages, the date is when last updated*

Table B3: Summary of non-EPA PCBs resources

Type	Title	Date of publication	Pages	Contains information specific to schools?
Washington State Department of Ecology				
Webpage	<a href="#">Polychlorinated biphenyls (PCBs)</a>	Unknown		Yes
Document	<a href="#">PCB Chemical action plan</a>	2015	223	Yes
Webpage	<a href="#">PCB light replacement in schools</a>	2022		Yes
Webpage	<a href="#">PCBs in building materials</a>	2022		No
Document	<a href="#">How to find and address PCBs in building materials</a>	2022	59	No
Document	<a href="#">How to estimate abatement project costs for PCBs in building materials</a>	2022	14	No
Document	<a href="#">Focus on: PCBs in building materials</a>	2021	3	No
Document	<a href="#">Polychlorinated biphenyl dangerous waste guide</a>	2021	14	No
Research Report	<a href="#">Polychlorinated biphenyls (PCBs) in general consumer products</a>	2014	64	No
Western States Pediatric Environmental Health Specialties Unit				
Webpage	<a href="#">PCBs</a>	Unknown		Yes
Document	<a href="#">Fact Sheet: Polychlorinated biphenyls (PCBs) in schools: How children are exposed, health risks, and tips to reduce exposure</a>	2017	2	Yes
Document	<a href="#">Poster: Managing PCBs in schools</a>	2017	1	Yes
University of Washington Environmental Health & Safety				
Webpage	<a href="#">Polychlorinated biphenyls (PCBs)</a>	Unknown		No
Document	<a href="#">Polychlorinated biphenyls (PCBs) management</a>	2018	5	No
Document	<a href="#">PCB caulking work plan: University of Washington's Seattle campus</a>	2014	12	
The Office of Senator Edward J. Markey (D-Mass)				
Research Report	<a href="#">The ABCs of PCBs: A toxic threat to America's schools</a>	2018	46	Yes

a: For documents, date listed is date of publication. For webpages, the date is when last updated

# Appendix C: State K–12 school environmental health and safety regulation elements

Table C-1: State K–12 school environmental health and safety regulation elements

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Practice Effective Cleaning and Maintenance																
Inspections; maintenance practices																
Tier 1	Regular inspections required	X <sup>a</sup>	X	X	X		X	X	X	X	X		X <sup>a</sup>			X
Tier 2	Annual inspection of school facilities by building professional							X		X						
	Roof inspected 2x per year															
	Accurate records maintained of building inspections		X		X		X	X	X							
Tier 3	Teacher/ staff training												X			
Additional regulations		X	X		X	X	X				X			X	X	X
Cleaning practices																
Tier 1	Routine cleaning			X	X	X		X								X
	Proper equipment used to perform cleaning tasks		X					X								X
	Cleaning products are inaccessible to students		X		X			X	X	X					X	X
	Up to date inventory of all cleaning products used													X		
	Vacuum with HEPA filters															
	Walk-off mats placed at building entrances															

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Tier 2	Purchasing plans prioritize cleaning products that have one or more of the following traits: low or no VOC emissions, neutral PH, no known carcinogens, are biodegradable		X					X								
Tier 3	Teacher/ staff training												X			
Additional regulations		X	X	X	X	X	X	X	X	X	X			X	X	X
Prevent Mold and Moisture																
Mold and moisture																
Tier 1	Routine inspections to ensure building is free of moisture problems, water damage, and visible mold on all exterior surfaces		X								X					
	Fix leaking plumbing and leaks in the school building ASAP		X													
	Dry wet areas within 24-48 hours		X													
	Moisture-generating appliances (e.g. dryers) are vented to the outside							X								X
	Downspouts drain to the storm sewer or visibly sloped grade away from building															
Tier 2	Established mold prevention/ remediation plan		X													
	Ventilation systems circulate indoor air properly	X	X		X	X				X						X
	Humidity levels are kept between 30-60%															
	Vents installed to the outside in all areas of school building that use large quantities of water (e.g. kitchens, bathrooms, locker rooms, and pool facilities)					X										X



Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Additional/ other regulations		X	X			X	X	X	X				X		X	X
Reduce Chemical and Environmental Hazards																
Chemical and chemical-containing products																
Tier 1	Annual chemical inventory of the school				X											
	Chemicals not on the school district's approved chemical list marked for removal		X													
	Screenings and inspections of chemical-containing equipment (e.g. PCB light ballasts, mercury-containing items) to ensure equipment is properly managed; chemical equipment inventory lists															
	Chemicals are stored properly: clearly labeled, in undamaged containers, and stored according to chemically compatible families	X	X		X		X	X	X					X	X	X
	Chemicals are used properly; according to SDS or label instructions		X		X			X						X		X
	Chemicals are disposed of properly		X		X			X						X		X
	Regulation requires development of chemical hygiene plan				X			X						X		
	Chemical hygiene plan contains: chemical spill control policy; staff training requirements for chemical management; contact information for local authorities responsible for managing chemical spills							X						X		
	Regulation requires development of hazard communication plan															

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Tier 1 cont.	Hazard communication plan contains: contact information for person responsible for implementing plan; procedures for acquiring, maintaining, and providing access to SDSs; updated chemical inventory; provisions for employee training; and chemical labeling requirements							X <sup>b</sup>								
Tier 2	Regulation requires development of chemical management plan															
	Regulation requires development of chemical purchasing policy													X		
	Chemical purchasing policy ensures all chemical-containing products are reviewed and purchased by one individual or team															
	Chemical purchasing policy ensures no more than 5 year supply is purchased															
	Teachers and staff receive chemical management training as mandated under OSHA's laboratory safety standards													X		
	Students understand proper chemical management		X											X	X	
	Unused, unneeded, degraded, and unknown chemicals are removed from the school with the help of qualified professional				X			X								
Tier 3	Green chemistry curricula															
Additional/ other regulations		X	X		X	X		X	X	X	X		X	X	X	

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Mercury																
Tier 1	Mercury inventory list (in which all elemental mercury, mercury compounds, mercury solutions, and mercury-containing devices are cataloged)															
Tier 2	Excess, outdated, and unneeded mercury-containing products are removed and/ or replaced with alternatives containing no mercury															
	Mercury is recycled or disposed of in accordance with federal, state, and local regulations															
Additional/other regulations			X		X									X		
PCBs																
Tier 1	Inspection of the school's fluorescent light ballasts for leaking PCBs															
	Immediate removal and disposal of leaking PCB-containing light ballasts															
	Disposal of any PCB-contaminated materials at EPA-approved facility															
Additional/ other regulations														X		
Lead																
Tier 1	Inspection and inventory of lead-based paint (including: interior painted areas, exterior painted areas, play areas, playground equipment, and painted toys and furniture)										X					
Additional/ other regulations					X							X		X		
Asbestos																
Any regulations pertaining to asbestos					X						X	X		X		

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Radon																
Tier 1	Test frequently occupied rooms at or below ground level for radon; levels should be lower than EPA's action level of 4 pCi/L											X		X		
Tier 2	If mitigation is required, retest routinely to ensure mitigation is effective													X		
Tier 3	Re-testing after all major renovations; HVAC modifications or upgrades may affect radon intrusion															
Additional/ other regulations					X						X	X		X		
Drinking water; lead																
Tier 1	If public water system, comply with all primary drinking water regulations and applicable underground injection control requirements	X	X	X	X	X	X	X	X	X				X	X	X
	If public water system, ensure only lead-free pipes are used in installation or for repairs								X							
	If school water system, system in compliance with drinking water regulations	X	X		X	X	X	X	X	X	X			X		X
	Up to date plumbing survey							X								
	Lead test results for drinking water taps conducted within past 5 years		X					X			X					
	Lead concentrations at all drinking water taps should be below 15 ppb for a 250-milliliter sample (for PWS), for school water system lead concentrations at 10% of drinking water taps must be below EPA action level of 15 ppb							X								

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
	Test drinking water for contaminants (timing will differ depending on number of people served and where school get its water)		X		X			X		X		X				
	Plan in place for providing drinking water if contaminants are discovered		X					X				X				X
	Lead reduction plan (includes lead testing on regular basis; flushing program; replacement of pipes etc. if known to be source of lead and; disabling taps)		X					X				X				
	Routine maintenance of drinking water infrastructure (includes, if applicable, source water assessments and identification of any surrounding activities or sources that might have an adverse effect on water quality, inspection of water pipes for leaks and corrosion)				X					X	X					X
	Replace drinking fountains identified on EPA's list of known lead-containing models															
Tier 2	Schools with own wastewater management systems inspect and pump systems regularly							X			X					
Tier 3	Record measures specific to school							X								
Additional/ other regulations		X	X	X		X	X	X	X	X	X	X	X	X	X	X



Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Outdoor air pollution																
Tier 1	Vehicle and bus idling: school bus schedules designed to minimize bus idling													X		
	Intake vents are located away from vehicular traffic areas and chimneys for school heating systems; if intake vents cannot be moved, traffic is directed away from vent locations														X	X
	Procedure for responding to air quality index advisories							X								
Tier 2	Anti-idling policy applied to school buses, passenger vehicles, delivery trucks															
Tier 3	Retrofit school bus fleet with improved emission control technologies or replace older schools buses with newer, more fuel-efficient buses															
	School Flag Program to help school and surrounding community know daily air quality conditions															
	Teacher/ staff training												X			
	Student curricula												X			
Additional/ other regulations								X								X
Secondhand smoke																
Tier 1	Campus smoke-free policy							X			X			X		
Tier 2	Student smoking education program covers social and physiological consequences of tobacco															
Additional/ other regulations														X		X

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Ensure Good Ventilation																
HVAC																
Tier 1	Building has functioning ventilation system		X		X	X				X					X	X
	HVAC system settings fit schedule of building use		X													
	Regular HVAC inspections, including regular schedule for inspecting and changing filters							X							X	
	Regular cleaning of air supply diffusers, return registers, and outside air intakes									X						X
	Ducts and interior of air-handling units or unit ventilators are clean									X					X	X
Tier 2	All rooms are ventilated; outdoor ventilation meets or exceeds ASHRAE standards and/ or local code				X	X				X						X
	Install high efficiency filters							X								
	HVAC maintenance plan			X												X
	Air intakes are located away from high vehicular traffic areas, plumbing and exhaust stacks, and chimneys for the school's heating system														X	X
	Carbon monoxide detectors installed near combustion sources (e.g. boilers, stoves, hot water heaters, and vocational education shops)				X							X				

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Tier 3	ASHRAE IAQ Procedure (performance-based design approach in which building and ventilation system are designed to maintain contaminant concentrations at specified levels)															
	New air ventilation, cleaning, and filtration technologies (e.g. MERV-13 filters)							X								
	Specific measurements recorded to indicate and track HVAC system performance							X								
	Student curricula												X			
Additional/ other regulations		X	X		X	X			X			X	X		X	X
Prevent Pests and Reduce Pesticide Exposure																
Pest prevention and pesticide use																
Tier 1	Inspection and mitigation: entryways						X									X
	Inspection and mitigation: classrooms and offices															
	Inspection and mitigation: food preparation and serving areas								X							X
	Inspection and mitigation: rooms with extensive plumbing															
	Inspection and mitigation: maintenance areas							X								
	IPM program							X				X			X	
	IPM program: policy statement													X <sup>c</sup>	X	

Regulation Elements		WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Tier 2	IPM program: roles/ training												X			
	IPM program: regular site inspections															
	IPM program: records													X <sup>c</sup>		
	Pesticide use: pesticides that present least risk of exposure are used (experimental, phased out, or conditional-use pesticides not permitted)				X										X	X
	Caulk and crevice pesticide application, bait stations, or targeted spraying prioritized															
	All pesticides stored in secure area								X	X					X	X
	Pesticides are not sprayed during school hours													X		
Tier 3	Expanded IPM addresses outdoor areas such as playgrounds, athletic fields, parking lots, etc.							X								X
	Student curricula												X			
Additional/ other regulations		X	X	X	X		X	X	X	X	X	X		X	X	X
New Construction and Renovation																
School siting																
Community needs and environmental factors are considered; resources such as EPA's Voluntary School Siting Guidelines, EPA's Smart Growth and Schools website, or other resources are utilized in the decision making process								X					X		X	
Additional/ other regulations		X	X			X							X			X
Construction process; materials; IAQ; precipitation controls; design for pest reduction																

Regulation Elements	WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
IAQ addressed during design phase; EPA's IAQ Design Tools for Schools website, or other resources utilized		X					X								
Entry mat system addressed specifically during design process															
Materials selected to optimize for IAQ (e.g. contain low-toxicity, water-based formulations, release no or low VOC emissions, emit little or no odor, contain no heavy metals, are formaldehyde free, easy to clean and maintain, and are not susceptible to moisture damage that can foster mold growth)		X													X
IAQ management plan required to protect workers during construction process and prevent residual problems with IAQ in the completed building															
Materials installation: order of installation optimized for IAQ (e.g. allow potential off-gassing materials to dry before finishing materials are installed)															
Occupant safety: construction and renovation activities are scheduled while school is not in session or building occupants are relocated to prevent exposure to harmful chemicals															
Contractors required to follow EPA's Lead Renovation, Repair, and Painting (RRP) Rules (including using renovators certified by the EPA trained to follow lead-safe work practices)											X				
Contractors required to demonstrate they have received all necessary trainings and certifications															
Contractors utilize procedures to protect workers during construction process, such as isolating and ventilating work areas															



Regulation Elements	WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Precipitation controls installed to keep school building dry (e.g. sloped roofs, landscaping creates ground slopes to carry water away from building, prevent air intakes from collecting precipitation)							X								X
Design features incorporated to reduce the likelihood of pest problems															X
Additional/ other regulations	X	X		X		X		X				X	X	X	X
Energy and water efficiency															
Energy efficiency energy efficiency goals established; energy addressed at all levels of construction project; best practices for energy design as part of overall design, construction, and operations process to translate design intent into buildings that perform and earn ENERGY STAR															
Water efficiency incorporation of water-efficient products into building design and renovation plan															
LEED, CHPS, other certification															
Additional/ other regulations					X										
Additional opportunities for promoting environmental health in school facilities															
Classroom Comfort															
Lighting	X	X		X	X	X	X	X	X			X	X	X	X
Acoustics	X	X		X										X	X
Temperature control	X	X		X	X	X		X		X <sup>d</sup>		X <sup>e</sup>	X <sup>d</sup>	X	X
Additional/ other regulations							X <sup>f</sup>								
Energy and Water Efficiency															
Regular leak audits															
Landscaping uses plants with low-water needs															
Irrigation occurs at cooler times of day															

Regulation Elements	WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Operate all building systems (e.g. chillers, cooling towers, boilers, plumbing fixtures, and cafeteria equipment) as effeciently as possible															
Install water-saving devices when possible															
Install water bottle filling stations															
Low-carbon IT policy															
Appliance servicing schedule															
Removal of all pre-1979 fluorescent lighting															
Replace older equipment with energy-saving devices															
Procurement policy favors ENERGY STAR qualified products and/ or WaterSense labeled products															
EPA ENERGY STAR partner; minimum energy-performance score; and/ or management plan															
Portfolio Manager or other measures used to track energy and water effeciency															
Invest in solar panels, green roofs, or rain barrels															
Teacher/ staff training on best practices for energy and water saving															
Student curricula related to energy and water saving															
Additional/ other regulations					X										
Waste Management															
Recycling bins offered				X			X								
Minimize food waste															
Composting				X											
Purchasing policy prioritizes school supplies and equipment made with reycled materials															
Teacher/ staff training												X			

Regulation Elements	WA 246- 366	WA 246- 366A <sup>1</sup>	AZ	CO	IN	KY	MT	NV	NC	NH	OR	PA	RI	UT	WV <sup>2</sup>
Student curricula												X			
Additional/ other regulations			X	X	X	X	X	X	X	X			X	X	X

<sup>1</sup>Regulation not enforceable

<sup>2</sup>Regulation suspended as of 2020

<sup>a</sup>Frequency not specified

<sup>b</sup>Regulation does not require hazard communication plan specifically, but requires the elements of a hazard communication plan listed here.

<sup>c</sup>Regulation does not require IPM plan specifically, but requires pesticide use policy statement and record keeping.

<sup>d</sup>Only pertains to water temperature.

<sup>e</sup>Only pertains to staff training related to HVAC systems.

<sup>f</sup>This section of the regulation has been repealed.

## Learn More

Web: <https://deohs.washington.edu>

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# WASHINGTON STATE BOARD OF HEALTH

**Date:** March 8, 2023

**To:** Washington State Board of Health Members

**From:** Patty Hayes, Board Member

**Subject:** Rules Hearing –Exception Rulemaking, WAC 246-500-055, Human Remains Reduced Through Natural Organic Reduction

## Background and Summary:

The Washington State Board of Health (Board) has the authority under RCW 43.20.050(2)(f) to adopt rules and standards for the prevention and control of infectious and noninfectious diseases, including rules governing the receipt and conveyance of remains of deceased persons. Chapter 246-500 WAC is the Board rule that establishes standards for health and safety measures in the handling of human remains.

In 2019, the Washington State Legislature passed ESSB 5001 (Chapter 432, Laws 2019), which authorized natural organic reduction (NOR) as a disposition method for human remains. In 2020, the Board updated chapter 246-500 WAC to include NOR as an approved method. The Board also added a new subsection, WAC-246-500-055, Human Remains Reduced Through Natural Organic Reduction, to establish the requirements NOR facility operators must meet for testing and analyzing samples to prevent and control any potential health hazards. WAC 246-500-055 went into effect in January 2021.

Following the first year of rule implementation, Board staff conducted an informal survey of all four NOR facility operators to determine whether rule implementation was successful and if additional guidance was needed. Based on findings from the survey, staff identified a need for additional rulemaking to clarify the language in WAC-246-500-055. Under the Administrative Procedures Act, specifically RCW 34.05.310(4)(d), the Board may pursue “exception” rulemaking without filing a pre-proposal notice of inquiry (CR-101 form) for rules that correct typographical errors or clarify the language of a rule without changing its effect. The Board approved exception rulemaking for this rule on January 9<sup>th</sup>, 2023.

On January 31<sup>st</sup>, 2023, the Board filed a CR-102, Proposed Rule, for WAC 246-500-055 for public review and comment, as WSR 23-04-100. Proposed edits to the rule include:

- Correcting a typographic error in subsection (2)(b) concerning the weight of contaminants in reduced remains (changing dental “filing” to dental “filling”)
- Clarifying rule language in subsection (2)(f) related to initial testing requirements

(continued on the next page)



I have asked Molly Dinardo, Board Staff, to provide a summary of WAC 246-500-055 and the proposed rule edits and share any comments received during the public comment period. The Board will then hold a public hearing on the proposed rule.

**Recommended Board Actions:**

The Board may wish to consider, amend if necessary, and adopt the following motion:

The Board adopts the proposed revisions to WAC 246-500-055, as published in WSR 23-04-100, with any revisions described and agreed upon by the Board at today's meeting. The Board directs staff to file a CR-103, Order of Adoption, and establish an effective date.

**Staff**

Molly Dinardo

To request this document in an alternate format or a different language, please contact the Washington State Board of Health at 360 236 4110 or by email at [wsboh@sboh.wa.gov](mailto:wsboh@sboh.wa.gov). TTY users can dial 711.

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# Handling of Human Remains Through Natural Organic Reduction – Rules Hearing

Chapter 246-500-055 WAC

March 8, 2023



# Molly Dinardo, MPH

Health Policy Advisor

Washington State Board of Health (SBOH)



# Overview

- Rulemaking Background
- Timeline
- Proposed Rule
- Comments
- Next Steps
- Rules Hearing

# Rulemaking Background

- In 2019, the Legislature passed Engrossed Substitute Senate Bill (ESSB) 5001, Concerning Human Remains
- Bill authorized two new disposition methods for human remains, alkaline hydrolysis and natural organic reduction (NOR)
- Legislation did not include explicit Board authority, but there was recognition of health and sanitation issues related to new disposition methods
- Law went into effect May 1, 2020
- The Department of Licensing (DOL) conducted rulemaking to incorporate new disposition methods, which went into effect in June 2020



# Rulemaking Background

- Board conducted Rulemaking in 2020 to update chapter 246-500 WAC to add NOR and alkaline hydrolysis and include two new sections
  - WAC 246-500-053; Human remains reduced through alkaline hydrolysis
  - WAC 246-500-055; Human remains reduced through natural organic reduction
- Rule went into effect in January 2021
- After implementation, staff conducted a survey of all NOR facility operators to determine if rulemaking was successful
- Additional rulemaking identified for WAC 246-500-055
- Rulemaking narrowly scoped for exception rulemaking to correct typographical errors and clarify rule language

# Rulemaking Timeline



NOR Rule in Effect	Follow-Up with Facilities	CR-102	Public Comment Period	Rules Hearing and Possible Adoption	File CR-103	Rule Effective
January 2021	Spring - Summer 2022	January 2023	January – February 2023	March 2023	(Tentative) April 2023	(Tentative) May 2023

# Proposed Rule

WAC 246-500-055 - Human remains reduced through natural organic reduction

- Corrects a typographical error in subsection (2)(b) concerning the weight of contaminants in reduced remains
  - Changes dental “filings” to dental “fillings”
- Adds an introductory sentence to Table 500-A in subsection (2)(f)
  - Includes an “and” in Table 500-A in the fourth row (after salmonella)
  - Purpose is to clarify that a NOR facility operator must test all samples for arsenic, cadmium, lead, mercury, and selenium, and either fecal coliform or salmonella

# Proposed Rule

Table 500-A

Testing Parameters

Metals and other testing parameters	Limit (mg/kg dry weight), unless otherwise specified
Fecal coliform	< 1,000 Most probable number per gram of total solids (dry weight)
or	
Salmonella	< 3 Most probable number per 4 grams of total solids (dry weight)
and	
Arsenic	≤ 20 ppm
Cadmium	≤ 10 ppm
Lead	≤ 150 ppm
Mercury	≤ 8 ppm
Selenium	≤ 18 ppm

# Public Comments

- No written comments received during public comment period



# Next Steps

- A public rules hearing will be held after this presentation
- If the Board elects to adopt the proposed rule, staff will file a CR-103 with the code reviser
- Staff will continue to provide technical support and guidance to the Department of Licensing and NOR facility operators, as needed







# Rules Hearing

Washington State Board of Health

# | THANK YOU

**WAC 246-500-055 Human remains reduced through natural organic reduction.** (1) Other than the provisions of this section and WAC 246-500-010, this chapter does not apply to human remains after natural organic reduction.

(2) A natural organic reduction facility operator shall:

(a) Collect material samples for analysis that are representative of each instance of natural organic reduction using a sampling method such as described in the U.S. Composting Council 2002 Test Methods for the Examination of Composting and Compost, Method 02.01-A through E;

(b) Analyze each instance of reduced human remains for physical contaminants. Reduced remains must have less than 0.01 mg/kg dry weight of physical contaminants which include, but are not limited to, intact bone, dental (~~((fillings))~~) fillings, and medical implants;

(c) Analyze, using a third-party laboratory, the reduction facility's reduced human remains according to the following schedule:

(i) The reduction facility's initial (~~((twenty))~~) 20 instances of reduced human remains for the parameters identified in Table 500-A, and any additional instances of human remains necessary to achieve (~~((twenty))~~) 20 reductions meeting the limits identified in Table 500-A;

(ii) Following (~~((twenty))~~) 20 reductions meeting limits outlined in Table 500-A, analyze, at minimum, (~~((twenty-five))~~) 25 percent of a facility's monthly instances of reduced human remains for the parameters identified in Table 500-A until (~~((eighty))~~) 80 total instances have met the requirements in Table 500-A;

(iii) The local health jurisdiction may require tests for additional parameters under (b) and (c) of this subsection(~~((--))~~);

(d) Not release any human remains that exceed the limits identified in Table 500-A; (~~((and))~~)

(e) Prepare, maintain, and provide upon request by the local health jurisdiction, an annual report each calendar year. The annual report must detail the facility's activities during the previous calendar year and must include the following information:

(i) Name and address of the facility;

(ii) Calendar year covered by the report;

(iii) Annual quantity of reduced human remains;

(iv) Results of any laboratory analyses of reduced human remains;

and

(v) Any additional information required by the local health jurisdiction(~~((--))~~); and

(f) Test for arsenic, cadmium, lead, mercury, and selenium, and either fecal coliform or salmonella in reduced human remains to meet the testing parameters and limits identified in Table 500-A.

**Table 500-A**  
**Testing Parameters**

<b>Metals and other testing parameters</b>	<b>Limit (mg/kg dry weight), unless otherwise specified</b>
Fecal coliform	< 1,000 Most probable number per gram of total solids (dry weight)
or	
Salmonella	< 3 Most probable number per 4 grams of total solids (dry weight)

<u>and</u>	
Arsenic	$\leq 20$ ppm
Cadmium	$\leq 10$ ppm
Lead	$\leq 150$ ppm
Mercury	$\leq 8$ ppm
Selenium	$\leq 18$ ppm

(3) A local registrar, in cooperation with the Washington state funeral and cemetery board, may issue a burial-transit permit for disposition of human remains reduced through natural organic reduction. The permit for the disposition of remains reduced through natural organic reduction may be used in connection with the transportation of remains reduced through natural organic reduction by common carrier or other means.

(4) The local registrar or the department of health may issue a burial-transit permit for the disposition of human remains reduced through natural organic reduction which have been in the lawful possession of any person, firm, corporation, or association for a period of ~~((ninety))~~ 90 days or more. This permit will specify that the disposition of remains reduced through natural organic reduction must be consistent with Washington state laws and rules.





# PROPOSED RULE MAKING

**CR-102 (July 2022)**  
**(Implements RCW 34.05.320)**  
Do **NOT** use for expedited rule making

CODE REVISER USE ONLY

OFFICE OF THE CODE REVISER  
STATE OF WASHINGTON  
FILED

DATE: January 31, 2023

TIME: 3:32 PM

WSR 23-04-100

Agency: State Board of Health

☒ Original Notice

☐ Supplemental Notice to WSR

☐ Continuance of WSR

☐ Preproposal Statement of Inquiry was filed as WSR \_\_\_\_\_; or

☐ Expedited Rule Making--Proposed notice was filed as WSR \_\_\_\_\_; or

☒ Proposal is exempt under RCW 34.05.310(4) or 34.05.330(1); or

☐ Proposal is exempt under RCW \_\_\_\_\_.

**Title of rule and other identifying information:** (describe subject) WAC 246-500-055 – Human Remains Reduced Through Natural Organic Reduction. The State Board of Health (Board) is proposing administrative edits through exception rulemaking to correct typographical errors in the rule and clarify rule language without changing its intended effect.

## Hearing location(s):

**Date:**  
03/08/2023

**Time:**  
1:30 pm

**Location:** (be specific)  
  
This will be a hybrid meeting.  
Below is the physical address for  
those attending in person:  
**Washington State Department  
of Labor & Industries  
7273 Linderson Way SW,  
Tumwater, WA 98501**

**Comment:**  
  
Zoom webinar information for those attending virtually:  
[https://us02web.zoom.us/webinar/register/WN\\_VJVUA9FgQdym6TzrsmD2g](https://us02web.zoom.us/webinar/register/WN_VJVUA9FgQdym6TzrsmD2g)

**Date of intended adoption:** 03/08/2023 (Note: This is **NOT** the effective date)

## Submit written comments to:

Name: Molly Dinardo

Address: P.O. Box 47990

Olympia, WA

98504-7990

Email: molly.dinardo@sboh.wa.gov

Fax:

Other:

By (date) 02/27/2023

## Assistance for persons with disabilities:

Contact: Melanie Hisaw

Phone: 360-236-4104

Fax:

TTY:

Email: melanie.hisaw@sboh.wa.gov

Other:

By (date) 03/01/2023

**Purpose of the proposal and its anticipated effects, including any changes in existing rules:** The purpose of this proposal is to clarify rule language in WAC 246-500-055 and correct a typographical error. This rule establishes the requirements that natural organic reduction (NOR) facilities must meet for this specific reduction method. Under this section, NOR facility operators must collect material samples for analysis and conduct testing for certain contaminants. Interested parties have requested clarity and guidance with respect to Table 500-A. The Table requires testing for fecal coliform or salmonella and arsenic, cadmium, lead, mercury, and selenium but does not expressly include the word "and" between salmonella and arsenic. In addition, subsection (2)(b) refers to "dental filings" when it should refer to "dental fillings" with respect to the weight of physical contaminants that may be present in reduced remains.

Exception rulemaking is needed for the Board to expeditiously make administrative edits to the rule for purposes of clarity. Testing of natural organic reduction final product is essential to ensure the process eliminates pathogens and elements harmful to human health and the environment.

**Reasons supporting proposal:** NOR was approved by the Legislature in ESSB 5001 (Chapter 432, Laws of 2019) as an authorized method for the disposition of human remains. Washington was the first state in the country, and first place in the world to authorize this disposition method for human remains. This rule addresses specific health and safety concerns related to NOR and is intended to prevent and control health hazards that could be linked to NOR.

WAC 246-500-055 went into effect in January 2021. Since then, there have been four facilities licensed to conduct NOR in Washington. To date, each facility has successfully collected material samples, analyzed them for physical contaminants, and sent samples to be analyzed by third-party testing facilities.

This proposal is necessary to allow facilities to continue with their processes and ensure the initial testing requirements described in the rule are clear and accurate.

**Statutory authority for adoption:** RCW 43.20.050(2)(f)

**Statute being implemented:** RCW 43.20.050(2)(f), Engrossed Substitute Senate Bill 5001 (chapter 432, Laws of 2019) as codified in Chapter 68.05 RCW

**Is rule necessary because of a:**

Federal Law?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Federal Court Decision?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
State Court Decision?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

If yes, CITATION:

**Agency comments or recommendations, if any, as to statutory language, implementation, enforcement, and fiscal matters:** None

**Type of proponent:** ☐ Private ☐ Public ☒ Governmental

**Name of proponent:** (person or organization) Washington State Board of Health

**Name of agency personnel responsible for:**

Name	Office Location	Phone
Drafting: Molly Dinardo	101 Israel Road SE, Tumwater, WA, 98504	564-669-3455
Implementation: Molly Dinardo	101 Israel Road SE, Tumwater, WA, 98504	564-669-3455
Enforcement: Funeral and Cemetery Board	405 Black Lake Blvd SW Olympia, WA 98502	360-664-1555

**Is a school district fiscal impact statement required under [RCW 28A.305.135](#)?** ☐ Yes ☒ No

If yes, insert statement here:

The public may obtain a copy of the school district fiscal impact statement by contacting:

Name:  
Address:  
Phone:  
Fax:  
TTY:  
Email:  
Other:

**Is a cost-benefit analysis required under [RCW 34.05.328](#)?**

☐ Yes: A preliminary cost-benefit analysis may be obtained by contacting:  
Name:  
Address:  
Phone:  
Fax:  
TTY:  
Email:  
Other:

- ☒ No: Please explain: The proposed rule is exempt under RCW 34.05.328(5)(b)(iv) Rules that only correct typographical errors, make address or name changes, or clarify language of a rule without changing its effect. This proposal corrects typographical errors and clarifies language without changing intended effect in WAC 246-500-055.

## Regulatory Fairness Act and Small Business Economic Impact Statement

Note: The [Governor's Office for Regulatory Innovation and Assistance \(ORIA\)](#) provides support in completing this part.

### (1) Identification of exemptions:

This rule proposal, or portions of the proposal, **may be exempt** from requirements of the Regulatory Fairness Act (see [chapter 19.85 RCW](#)). For additional information on exemptions, consult the [exemption guide published by ORIA](#). Please check the box for any applicable exemption(s):

☐ This rule proposal, or portions of the proposal, is exempt under [RCW 19.85.061](#) because this rule making is being adopted solely to conform and/or comply with federal statute or regulations. Please cite the specific federal statute or regulation this rule is being adopted to conform or comply with, and describe the consequences to the state if the rule is not adopted.

Citation and description:

☐ This rule proposal, or portions of the proposal, is exempt because the agency has completed the pilot rule process defined by [RCW 34.05.313](#) before filing the notice of this proposed rule.

☐ This rule proposal, or portions of the proposal, is exempt under the provisions of [RCW 15.65.570](#)(2) because it was adopted by a referendum.

☒ This rule proposal, or portions of the proposal, is exempt under [RCW 19.85.025](#)(3). Check all that apply:

☐ [RCW 34.05.310](#) (4)(b)  
(Internal government operations)

☐ [RCW 34.05.310](#) (4)(e)  
(Dictated by statute)

☐ [RCW 34.05.310](#) (4)(c)  
(Incorporation by reference)

☐ [RCW 34.05.310](#) (4)(f)  
(Set or adjust fees)

☒ [RCW 34.05.310](#) (4)(d)  
(Correct or clarify language)

☐ [RCW 34.05.310](#) (4)(g)  
((i) Relating to agency hearings; or (ii) process requirements for applying to an agency for a license or permit)

☐ This rule proposal, or portions of the proposal, is exempt under [RCW 19.85.025](#)(4) (does not affect small businesses).

☐ This rule proposal, or portions of the proposal, is exempt under RCW \_\_\_\_\_.

Explanation of how the above exemption(s) applies to the proposed rule: The proposal corrects typographical errors and clarifies language without changing the intended effect in WAC 246-500-055.

### (2) Scope of exemptions: *Check one.*

☒ The rule proposal is fully exempt (*skip section 3*). Exemptions identified above apply to all portions of the rule proposal.

☐ The rule proposal is partially exempt (*complete section 3*). The exemptions identified above apply to portions of the rule proposal, but less than the entire rule proposal. Provide details here (consider using [this template from ORIA](#)):

☐ The rule proposal is not exempt (*complete section 3*). No exemptions were identified above.

### (3) Small business economic impact statement: *Complete this section if any portion is not exempt.*

If any portion of the proposed rule is **not exempt**, does it impose more-than-minor costs (as defined by RCW 19.85.020(2)) on businesses?

☐ No Briefly summarize the agency's minor cost analysis and how the agency determined the proposed rule did not impose more-than-minor costs.

☐ Yes Calculations show the rule proposal likely imposes more-than-minor cost to businesses and a small business economic impact statement is required. Insert the required small business economic impact statement here:

The public may obtain a copy of the small business economic impact statement or the detailed cost calculations by contacting:

Name:

Address:

Phone:

Fax:

TTY:

Email:

Other:

**Date:** January 31, 2023

**Name:** Michelle Davis

**Title:** Executive Director, State Board of Health

**Signature:**

A handwritten signature in black ink, reading "Michelle A. Davis". The signature is written in a cursive, flowing style with a large initial "M".

## RCW 43.20.050

### **Powers and duties of state board of health—Rule making—Delegation of authority—Enforcement of rules.**

(1) The state board of health shall provide a forum for the development of public health policy in Washington state. It is authorized to recommend to the secretary means for obtaining appropriate citizen and professional involvement in all public health policy formulation and other matters related to the powers and duties of the department. It is further empowered to hold hearings and explore ways to improve the health status of the citizenry.

In fulfilling its responsibilities under this subsection, the state board may create ad hoc committees or other such committees of limited duration as necessary.

(2) In order to protect public health, the state board of health shall:

(a) Adopt rules for group A public water systems, as defined in RCW 70A.125.010, necessary to assure safe and reliable public drinking water and to protect the public health. Such rules shall establish requirements regarding:

(i) The design and construction of public water system facilities, including proper sizing of pipes and storage for the number and type of customers;

(ii) Drinking water quality standards, monitoring requirements, and laboratory certification requirements;

(iii) Public water system management and reporting requirements;

(iv) Public water system planning and emergency response requirements;

(v) Public water system operation and maintenance requirements;

(vi) Water quality, reliability, and management of existing but inadequate public water systems; and

(vii) Quality standards for the source or supply, or both source and supply, of water for bottled water plants;

(b) Adopt rules as necessary for group B public water systems, as defined in RCW 70A.125.010. The rules shall, at a minimum, establish requirements regarding the initial design and construction of a public water system. The state board of health rules may waive some or all requirements for group B public water systems with fewer than five connections;

(c) Adopt rules and standards for prevention, control, and abatement of health hazards and nuisances related to the disposal of human and animal excreta and animal remains;

(d) Adopt rules controlling public health related to environmental conditions including but not limited to heating, lighting, ventilation, sanitary facilities, and cleanliness in public facilities including but not limited to food service establishments, schools, recreational facilities, and transient accommodations;

(e) Adopt rules for the imposition and use of isolation and quarantine;

(f) Adopt rules for the prevention and control of infectious and noninfectious diseases, including food and vector borne illness, and rules governing the receipt and conveyance of remains of deceased persons, and such other sanitary matters as may best be controlled by universal rule; and

(g) Adopt rules for accessing existing databases for the purposes of performing health related research.

(3) The state board shall adopt rules for the design, construction, installation, operation, and maintenance of those on-site sewage systems with design flows of less than three thousand five hundred gallons per day.



(4) The state board may delegate any of its rule-adopting authority to the secretary and rescind such delegated authority.

(5) All local boards of health, health authorities and officials, officers of state institutions, police officers, sheriffs, constables, and all other officers and employees of the state, or any county, city, or township thereof, shall enforce all rules adopted by the state board of health. In the event of failure or refusal on the part of any member of such boards or any other official or person mentioned in this section to so act, he or she shall be subject to a fine of not less than fifty dollars, upon first conviction, and not less than one hundred dollars upon second conviction.

(6) The state board may advise the secretary on health policy issues pertaining to the department of health and the state.

[ 2021 c 65 § 37; 2011 c 27 § 1; 2009 c 495 § 1; 2007 c 343 § 11; 1993 c 492 § 489; 1992 c 34 § 4. Prior: 1989 1st ex.s. c 9 § 210; 1989 c 207 § 1; 1985 c 213 § 1; 1979 c 141 § 49; 1967 ex.s. c 102 § 9; 1965 c 8 § 43.20.050; prior: (i) 1901 c 116 § 1; 1891 c 98 § 2; RRS § 6001. (ii) 1921 c 7 § 58; RRS § 10816.]

# WASHINGTON STATE BOARD OF HEALTH

**Date:** March 8, 2023

**To:** Washington State Board of Health Members

**From:** Kelly Oshiro, Board Vice Chair

**Subject:** Briefing – Chapter 246-650 WAC, Newborn Screening;  
Mucopolysaccharidoses Type II (MPS II) Qualifying Assumption Analysis Findings

## **Background and Summary:**

The State Board of Health (Board) has the authority under RCW 70.83.050 to adopt rules for screening Washington-born infants for hereditary conditions. WAC 246-650-010 defines the conditions, and WAC 246-650-020 lists the conditions for which all Washington-born newborns are to be screened.

On October 26, 2022, the Board received a petition for rulemaking requesting an amendment to Chapter 246-650 WAC to add Mucopolysaccharidoses Type II (MPS II) as a condition for newborn screening. MPS II, also known as Hunter's Syndrome, is a rare hereditary metabolic condition that prevents the body from properly breaking down and processing complex sugars, or glycosaminoglycans (GAGs).<sup>1,2</sup> This condition occurs when the body lacks an enzyme called iduronate-2-sulfatases (I2S), or these enzymes aren't functioning as they should. When the body has high levels of complex sugars, or they aren't breaking down, it causes the buildup of certain waste products in a person's cells and causes damage to many parts of the body, including bones, muscles, connective tissues, and organs.

MPS II was added as a condition on the Secretary of the Department of Health and Human Services (HSS) Recommended Uniform Screening Panel (RUSP) in 2022.<sup>3</sup> Missouri and Illinois currently screen for MPS II as part of their state newborn screening programs.<sup>4</sup> In addition, pilot programs in New York and Taiwan are also testing MPS II screening.

At its November 9, 2022, meeting, the Board denied the petition for rulemaking and directed Board staff to work with the Department of Health to conduct a qualifying assumption analysis to determine if there is enough scientific evidence to evaluate MPS II for inclusion in chapter 246-650 WAC. The Board uses a defined set of criteria to evaluate conditions for inclusion on the panel. These criteria are: available screening technology, diagnostic testing and treatment available, prevention potential and medical rationale, public health rationale, and cost-benefit/cost-effectiveness. If there is enough scientific evidence available to apply these criteria to a condition, the Board may then

(continued on the next page)

decide to convene a technical advisory committee (TAC) to inform its decision on whether a condition should be included in the newborn screening (NBS) panel. I have invited Molly Dinardo, Board Staff, and John Thompson, Director of the Department of Health's Newborn Screening Program, to provide an update on MPS II and report on findings from the qualifying assumption analysis.

#### Recommended Board Actions:

The Board may wish to consider one of the following motions:

The Board directs staff to work with the Department of Health to convene a technical advisory committee to evaluate Mucopolysaccharidoses Type II (MPS II) using the Board's process and criteria to evaluate conditions for inclusion in WAC 246-650-020 and then make a recommendation to the Board.

OR

The Board determines that there is insufficient information available at this time to know whether Mucopolysaccharidoses Type II (MPS II) meets the qualifying assumption for the Board's criteria for evaluating conditions for inclusion in the rule. The Board directs staff to update the information in two years and return to the Board for consideration at that time.

#### Staff

Molly Dinardo

To request this document in an alternate format or a different language, please contact the Washington State Board of Health at 360 236 4110 or by email at [wsboh@sboh.wa.gov](mailto:wsboh@sboh.wa.gov). TTY users can dial 711.

PO Box 47990 • Olympia, WA 98504-7990  
360-236-4110 • [wsboh@sboh.wa.gov](mailto:wsboh@sboh.wa.gov) • [sboh.wa.gov](http://sboh.wa.gov)

- 
1. National Institute of Health | Mucopolysaccharidoses Fact Sheet | National Institute of Neurological Disorders and Stroke. Updated July 2022. Accessed February 21, 2023.  
<https://www.ninds.nih.gov/mucopolysaccharidoses-fact-sheet>
  2. Health Resources and Services Administration | Mucopolysaccharidosis type II | Newborn Screening. Updated September 2022. Accessed February 21, 2023.  
<https://newbornscreening.hrsa.gov/conditions/mucopolysaccharidosis-type-ii>
  3. Health Resources and Services Administration (HRSA) | Recommended Uniform Screening Panel. Updated February 2023. Accessed February 21, 2023.  
[https://www.hrsa.gov/advisory\\_committees/heritabledisorders/rusp](https://www.hrsa.gov/advisory_committees/heritabledisorders/rusp)
  4. Health Resources and Services Administration (HRSA) | Evidence-Based Review of Newborn Screening for Mucopolysaccharidosis Type II: Final Report. Prepared for the Maternal and Child Health Bureau. Published February 20, 2022. Accessed February 21, 2023.  
[https://www.hrsa.gov/sites/default/files/hrsa/advisory\\_committees/heritable-disorders/meetings/mps-ii-final-report-3-28-2022.pdf](https://www.hrsa.gov/sites/default/files/hrsa/advisory_committees/heritable-disorders/meetings/mps-ii-final-report-3-28-2022.pdf)



# Washington State Board of Health

Qualifying Assumption Analysis Findings – Mucopolysaccharidosis type II (MPS II)

March 8, 2023



# **John Thompson, PhD, MPH, MPA**

Director, Department of Health (DOH) Newborn Screening Program

# **Molly Dinardo, MPH**

Health Policy Advisor, Washington State Board of Health (SBOH)





# Board Policy for Newborn Screening Criteria

Three guiding principles govern all aspects of the evaluation of a candidate condition for possible inclusion in Washington's Newborn Screening panel:

- Decision to add a screening test should be driven by evidence. For example, test reliability and available treatment have been scientifically evaluated, and those treatments can improve health outcomes for affected children.
- All children who screen positive should have reasonable access to diagnostic and treatment services.
- Benefits of screening for the disease or condition should outweigh harm to families, children, and society

# Newborn Screening Criteria

- Available screening technology
- Diagnostic testing and treatment available
- Prevention potential and medical rationale
- Public health rationale
- Cost-benefit/cost-effectiveness

# MPS II Qualifying Assumption

- Petition - Mucopolysaccharidosis type II (MPS II)
  - Submitted October 26, 2022, requesting an amendment to chapter 246-650 WAC to add MPS II as a condition for newborn screening
  - MPS II added to the federal Recommended Uniform Screening Panel (RUSP) in 2022
  - At the Board's November 2022 meeting, Members adopted the motion to deny the petition and direct Board staff and the Department to perform a qualifying assumption analysis of MPS II
- Preliminary review of five criteria
  - John Thompson – DOH
  - Molly Dinardo – SBOH

# MPS II 101

- Inherited X-linked metabolic disorder
- Result of abnormalities in the iduronate-2-sulfatase (IDS) enzyme, caused by IDS gene mutations
- Two primary classifications of MPS II
  - Severe – onset in early childhood with neurological deterioration, rapid disease progression (symptom onset ~2.7 years)
  - Attenuated – onset later in childhood, slower progression (symptom onset ~4.3 years)
- Signs and symptoms vary, and can include:
  - Hearing loss, enlarged facial features (e.g., swollen lips, large/rounded cheeks, broad nose, swollen tongue), enlarged liver or spleen, joint stiffness, hernias, poor vision, impaired developmental and motor skills, behavioral issues

# MPS II and Newborn Screening Programs

- States that currently screen for MPS II
  - Illinois (since 2017)
  - Missouri (since 2018)
- States that have pilot testing programs
  - New York
  - Taiwan



# MPS II Available Screening Technology

- Two methods (~732,000 screened)
  - Tandem mass spectrometry – Illinois
  - Fluorometry – Missouri
  - Neither method could be multiplexed with current testing in WA
- Prevalence: 1:62,500 births
- Test performance
  - Sensitivity: 100% (no known false negatives)
  - Specificity: 99.99%
  - Positive Predictive Value: 9.5%

# MPS II Diagnostic Testing and Treatment Available

- Diagnostic tests
  - Urinary glycosaminoglycans (GAGs)
    - dermatan sulfate, heparan sulfate
  - Molecular testing can be helpful
  - Testing available at Seattle Children's or other reference labs
- Treatment
  - Weekly enzyme replacement therapy (ERT): Elaprase (Idursulfase)
  - Management requires support from multidisciplinary biochemical genetics team
  - Infrastructure and treatment available at Seattle Children's hospital
    - Current staffing levels are low with recruitments in progress

# MPS II Prevention Potential and Medical Rationale

- Early treatment may prevent or delay some MPS II symptoms and improve quality of life
- ERT treatment associated with
  - Improvements in mobility outcomes, cardiac and respiratory symptoms
  - Decreased mortality in adulthood (in UK study with ERT, median age of death increased 3.5 years)
- Limitations of current treatment
  - Lack of targeted treatment for neurological symptoms
  - Data is lacking regarding benefit of early vs. symptomatic treatment
- Due to the rareness of the condition, peer reviewed evidence base is limited
  - Current evidence relies on expert and patient reported benefits

# MPS II Public Health Rationale

- According to findings in the federal report, screening for MPS II in newborn screening programs would identify more cases of MPS II compared with clinical identification
- MPS II X-linked recessive pattern warrants universal screening
  - MPS II primarily affects babies assigned male at birth, and babies assigned female at birth can be carriers of the gene
  - If the birthing parent is a carrier of the MPS II gene:
    - 50% risk that babies born as male will have the disease
    - 50% risk that babies born as female will be a carrier of the disease

# MPS II Cost-Benefit/Cost-Effectiveness

- Federal Advisory Committee on Heritable Disorders in Newborns and Children (ACHDNC)
  - Limitations from evidence review report (2/20/2022):
    - “Limited data were available for many parameter inputs. Insufficient data were available to project long-term outcomes for MPS II, either through newborn screening or clinical identification.”
    - “Given the rare nature of newborn screened conditions, data are typically scarce for conditions being considered for addition to the RUSP. Compared with other conditions that have been nominated and considered for addition to the panel, data for the consideration of MPS II were considerably sparser.”
  - Without additional published data, any formal cost-benefit analysis would rely solely on expert opinion
  - Other, non-quantifiable considerations could be reviewed and discussed
    - Psychosocial benefits/harms including impact of ambiguous results
    - Adverse effects/unintended consequences of screening



# | THANK YOU

# Resources from Federal Review of MPS II for the RUSP:

- Evidence-Based Review of Newborn Screening for Mucopolysaccharidosis Type II: Final Report. Prepared for the Maternal and Child Health Bureau. February 20, 2022.
  - [Final Report](#)
  - Available under [Recommendations to HHS Secretary](#)
- Recommendations to the Advisory Committee on Heritable Disorders in Newborns and Children (ACHDNC) for Newborn Screening of MPS II. February 10, 2022.
  - [PowerPoint Presentation for the ACHDNC Meeting](#)
  - Available under ACHDNC's [February 2022 Meeting Materials](#)

# **Washington State Board of Health**

**PROCESS TO EVALUATE CONDITIONS FOR INCLUSION IN THE  
REQUIRED NEWBORN SCREENING PANEL**

The Washington State Board of Health has the duty under RCW 70.83.050 to define and adopt rules for screening Washington-born infants for heritable conditions. Chapter 246-650-020 WAC lists conditions for which all newborns must be screened. Members of the public, staff at Department of Health, and/or Board members can request that the Board review a particular condition for possible inclusion in the NBS panel. In order to determine which conditions to include in the newborn screening panel, the Board convenes an advisory committee to evaluate candidate conditions using guiding principles and an established set of criteria.

The following is a description of the Qualifying Assumption, Guiding Principles, and Criteria which the Board has approved in order to evaluate conditions for possible inclusion in the newborn screening panel. The Washington State Board of Health and Department of Health apply the qualifying assumption. The Board appointed Advisory Committee applies the following three guiding principles and evaluates the five criteria in order to make recommendations to the Board on which condition(s) to include in the state's required NBS panel.

## QUALIFYING ASSUMPTION

Before an advisory committee is convened to review a candidate condition against the Board's five newborn screening requirements, a preliminary review should be done to determine whether there is sufficient scientific evidence available to apply the criteria for inclusion.

## THREE GUIDING PRINCIPLES

**Three guiding principles govern all aspects of the evaluation of a candidate condition for possible inclusion in the NBS panel.**

- Decision to add a screening test should be driven by evidence. For example, test reliability and available treatment have been scientifically evaluated, and those treatments can improve health outcomes for affected children.
- All children who screen positive should have reasonable access to diagnostic and treatment services.
- Benefits of screening for the disease/condition should outweigh harm to families, children and society.

## CRITERIA

- 1. Available Screening Technology:** Sensitive, specific and timely tests are available that can be adapted to mass screening.
- 2. Diagnostic Testing and Treatment Available:** Accurate diagnostic tests, medical expertise, and effective treatment are available for evaluation and care of all infants identified with the condition.
- 3. Prevention Potential and Medical Rationale:** The newborn identification of the condition allows early diagnosis and intervention.  
Important considerations:
  - There is sufficient time between birth and onset of irreversible harm to allow for diagnosis and intervention.
  - The benefits of detecting and treating early onset forms of the condition (within one year of life) balance the impact of detecting late onset forms of the condition.
  - Newborn screening is not appropriate for conditions that only present in adulthood.
- 4. Public Health Rationale:** Nature of the condition justifies population-based screening rather than risk-based screening or other approaches.
- 5. Cost-benefit/Cost-effectiveness:** The outcomes outweigh the costs of screening. All outcomes, both positive and negative, need to be considered in the analysis. Important considerations to be included in economic analyses include:
  - The prevalence of the condition among newborns.
  - The positive and negative predictive values of the screening and diagnostic tests.
  - Variability of clinical presentation by those who have the condition.
  - The impact of ambiguous results. For example the emotional and economic impact on the family and medical system.
  - Adverse effects or unintended consequences of screening.





# WASHINGTON STATE BOARD OF HEALTH

**Date:** March 8, 2023

**To:** Washington State Board of Health Members

**From:** Kelly Oshiro, Board Chair

**Subject:** Petition – Chapter 246-650 WAC, Newborn Screening, Request to add Guanidinoacetate methyltransferase (GAMT) deficiency

## Background and Summary:

The Administrative Procedures Act (RCW 34.05.330) allows any person to petition a state agency to request the adoption, amendment, or repeal of any rule. Upon receipt of a petition, the agency has sixty days to either (1) deny the petition in writing, stating the reasons and, as appropriate, offer other means for addressing the concerns raised by the petitioner, or (2) accept the petition and initiate rulemaking.

On February 24<sup>th</sup>, 2023, the Washington State Board of Health (Board) received a petition for rulemaking requesting an amendment to chapter 246-650 WAC to add Guanidinoacetate methyltransferase (GAMT) deficiency as a condition for newborn screening. The petitioner's request indicates they submitted the petition because GAMT deficiency was recently approved by the federal Advisory Committee on Heritable Disorders in Newborns and Children in June of 2022 for inclusion in the federal Recommended Uniform Screening Panel (RUSP).<sup>1</sup> The Secretary of Health and Human Services endorsed this decision on January 4<sup>th</sup>, 2023.<sup>2</sup>

GAMT deficiency is an inherited condition that prevents the body from properly producing creatine, an amino acid that helps organs store and use energy.<sup>3,4</sup> Without enough creatine, the body's organs do not get enough energy to support its vital functions, which can cause damage. This damage primarily affects the brain and muscles, as these organs need the most energy. Without early treatment, GAMT deficiency can cause serious cognitive impairments, and result in developmental delays for speech and mobility, intellectual disabilities, uncontrolled movements, muscle weakness, and seizures.

The Board has the authority under RCW 70.83.050 to adopt rules for screening Washington-born infants for hereditary conditions. WAC 246-650-010 defines the conditions, and WAC 246-650-020 lists the conditions for which all Washington-born newborns are to be screened.

Before an advisory committee is convened to review a candidate condition against the Board's five newborn screening requirements, a preliminary review (or qualifying assumption analysis) should be done to determine whether there is sufficient scientific evidence available to apply the criteria for inclusion. The Board uses a defined set of

(continued on the next page)

criteria to evaluate conditions for inclusion on the panel. These criteria are: available screening technology, diagnostic testing and treatment available, prevention potential and medical rationale, public health rationale, and cost-benefit/cost-effectiveness. If there is enough scientific evidence available to apply these criteria to a condition, the Board may then decide to convene a technical advisory committee (TAC) to inform its decision on whether a condition should be included in the newborn screening (NBS) panel.

I have invited Molly Dinardo, Board Staff, and John Thompson, Director of the Department of Health's Newborn Screening Program, to present preliminary information on GAMT deficiency and an overview of the Board's process and criteria for evaluating conditions for inclusion in the rule.

#### Recommended Board Actions:

The Board may wish to consider one of the following motions:

The Board declines the petition for rulemaking to add GAMT deficiency as a condition for newborn screening in Chapter 246-650 WAC but directs staff to work with the Department of Health to convene a technical advisory committee to evaluate GAMT deficiency using the Board's process and criteria to evaluate conditions for inclusion in WAC 246-650-020 and then make a recommendation to the Board.

OR

The Board determines that there is insufficient information available at this time to know whether GAMT deficiency meets the qualifying assumption for the Board's evaluation criteria for inclusion in the rule. The Board directs staff to update the information in two years and return to the Board for consideration at that time.

OR

The Board accepts the petition for rulemaking to amend Chapter 246-650 WAC to add Guanidinoacetate methyltransferase (GAMT) deficiency as a condition for newborn screening. The Board directs staff to notify the requestor of its decision and to file a CR-101, Preproposal of Inquiry, under its authority in RCW 70.83.050.

#### Staff

Molly Dinardo

To request this document in an alternate format or a different language, please contact the Washington State Board of Health at 360-236-4110 or by email at [wsboh@sboh.wa.gov](mailto:wsboh@sboh.wa.gov). TTY users can dial 711.

Washington State Board of Health  
March 8, 2023, Meeting Memo

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1. Powell, Cynthia M. Advisory Committee on Heritable Disorders in Newborns and Children (ADHNC). ADHNC Chair Letter to Secretary of Health and Human Services for new ADHNC recommendation for Guanidinoacetate Methyltransferase Deficiency. June 7, 2022. Accessed February 22, 2023.  
<https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/heritable-disorders/meetings/chair-letter-secretary-gamt.pdf>
2. Becerra, Xavier. Secretary of Health and Human Services. Letter Response to ADHNC Recommendation Letter. January 4, 2023. Accessed February 22, 2023.  
<https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/heritable-disorders/meetings/gamt-signed-response.pdf>
3. National Institutes of Health | Guanidinoacetate methyltransferase deficiency | About the Disease | Genetic and Rare Diseases Information Center. Last Updated February 2023. Accessed February 22, 2023.  
<https://rarediseases.info.nih.gov/diseases/2578/guanidinoacetate-methyltransferase-deficiency>
4. Health Resources and Services Administration (HRSA) | Guanidinoacetate methyltransferase deficiency | Newborn Screening. Last Updated December 2022. Accessed February 22, 2023.  
<https://newbornscreening.hrsa.gov/conditions/guanidinoacetate-methyltransferase-deficiency>



## PETITION FOR ADOPTION, AMENDMENT, OR REPEAL OF A STATE ADMINISTRATIVE RULE

In accordance with [RCW 34.05.330](#), the Office of Financial Management (OFM) created this form for individuals or groups who wish to petition a state agency or institution of higher education to adopt, amend, or repeal an administrative rule. You may use this form to submit your request. You also may contact agencies using other formats, such as a letter or email.

The agency or institution will give full consideration to your petition and will respond to you within 60 days of receiving your petition. For more information on the rule petition process, see Chapter 82-05 of the Washington Administrative Code (WAC) at <http://apps.leg.wa.gov/wac/default.aspx?cite=82-05>.

### CONTACT INFORMATION *(please type or print)*

Petitioner's Name \_\_\_\_\_  
Name of Organization \_\_\_\_\_  
Mailing Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
Telephone \_\_\_\_\_ Email \_\_\_\_\_

### COMPLETING AND SENDING PETITION FORM

- Check all of the boxes that apply.
- Provide relevant examples.
- Include suggested language for a rule, if possible.
- Attach additional pages, if needed.
- Send your petition to the agency with authority to adopt or administer the rule. Here is a list of agencies and their rules coordinators: <http://www.leg.wa.gov/CodeReviser/Documents/RClist.htm>.

### INFORMATION ON RULE PETITION

Agency responsible for adopting or administering the rule: \_\_\_\_\_

☐ **1. NEW RULE - I am requesting the agency to adopt a new rule.**

☐ The subject (or purpose) of this rule is: \_\_\_\_\_

☐ The rule is needed because: \_\_\_\_\_

☐ The new rule would affect the following people or groups: \_\_\_\_\_

☐ **2. AMEND RULE - I am requesting the agency to change an existing rule.**

List rule number (WAC), if known: \_\_\_\_\_

☐ I am requesting the following change: \_\_\_\_\_

☐ This change is needed because: \_\_\_\_\_

☐ The effect of this rule change will be: \_\_\_\_\_

☐ The rule is not clearly or simply stated: \_\_\_\_\_

☐ **3. REPEAL RULE - I am requesting the agency to eliminate an existing rule.**

List rule number (WAC), if known: \_\_\_\_\_

*(Check one or more boxes)*

☐ It does not do what it was intended to do.

☐ It is no longer needed because: \_\_\_\_\_

☐ It imposes unreasonable costs: \_\_\_\_\_

☐ The agency has no authority to make this rule: \_\_\_\_\_

☐ It is applied differently to public and private parties: \_\_\_\_\_

☐ It conflicts with another federal, state, or local law or rule. List conflicting law or rule, if known: \_\_\_\_\_

☐ It duplicates another federal, state or local law or rule. List duplicate law or rule, if known: \_\_\_\_\_

☐ Other (please explain): \_\_\_\_\_



### GAMT Deficiency Treatment Cost Estimate

Treatment costs of Creatine, Ornithine, and Sodium for a child diagnosed through newborn screening						
Age (years)	<sup>4</sup> Average body weight (kg)	<sup>1,5</sup> Creatine cost	<sup>2,5</sup> Ornithine cost	<sup>3,6</sup> Sodium Benzoate cost	Total cost per day	Total cost per month
2	13	\$0.27	\$0.69	\$0.09	\$1.05	\$31.50
4	16	\$0.34	\$0.85	\$0.11	\$1.30	\$39.00
6	21	\$0.44	\$1.11	\$0.15	\$1.70	\$51.00
8	26	\$0.55	\$1.38	\$0.18	\$2.11	\$63.30
10	32	\$0.67	\$1.70	\$0.22	\$2.59	\$77.70
12	40	\$0.84	\$2.12	\$0.28	<sup>7</sup> \$3.24	<sup>7</sup> \$97.20
14	52	\$1.09	\$2.76	\$0.36	<sup>7</sup> \$4.22	<sup>7</sup> \$126.60
Total for GAMT Treatment Years 0-18						<b>\$15,631</b>

Health Care Costs				
Purpose of Visit	# of Visits/year	Years	<sup>9</sup> Cost/visit	Total
Diagnosis & F/U Year 0-1	4	1	\$300	\$1200
Follow Up Years 2-10	2	9	\$300	\$5400
Follow Up Years 11-18	1	8	\$300	\$2400
HCP Care Years 0-18				<b>\$9,000</b>

<sup>8</sup>In 2003, the CDC estimated the average lifetime direct cost to the family of an individual with **mental retardation is \$1,014,000**. Indirect costs to family and society not included. The cost during years 0-18 for an infant diagnosed at birth with GAMT Deficiency, to **avoid mental retardation, is \$24,631**. This includes regular checkups with a specialist, and creatine, ornithine, and sodium benzoate supplementation.

- <sup>1</sup>**Cost of creatine** based on dosage of 600mg/kg body weight; (treatment range is 400-800mg)
- <sup>2</sup>**Cost of ornithine** based on dosage of 600mg/kg body weight; (treatment range is 400-800mg)
- <sup>3</sup>**Cost of sodium benzoate** based on dosage of 200mg/kg body weight; (treatment range is 100-200mg)
- <sup>4</sup>Average body weight is for males and is from CDC growth chart: [cdc.gov/growthcharts/data/set1clinical/cj411021.pdf](http://cdc.gov/growthcharts/data/set1clinical/cj411021.pdf)
- <sup>5</sup>Costs based on online supplier jomarlabs.com current cost to GAMT families for creatine monohydrate \$30.05/kilogram and l-ornithine HCL \$88.48/kilogram
- <sup>6</sup>Cost based on South Valley Compounding Pharmacy cost of \$35.00/kilogram
- <sup>7</sup>Supplement requirements tend to plateau between 40-52 kilograms body weight
- <sup>8</sup>Estimated direct costs of mental retardation by CDC can be found at <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5303a4.htm>
- <sup>9</sup>Specialist visit cost based on University of Utah costs for a metabolic geneticist appointment.

This document was created through a collaboration between the Association for Creatine Deficiencies, Utah Public Health Lab, ARUP Laboratories, and University of Utah Hospital

### LDT GAMT Deficiency Newborn Screening Implementation Cost Estimate

Additional Lab Instrument	N/A
Additional Lab Staff	N/A
Additional Specimen Collection Costs	N/A
<sup>1</sup> Guanidinoacetate Internal Standard -five year supply	\$50
<sup>1</sup> Creatine Internal Standard -five year supply	\$50
<sup>2</sup> Eight weeks of method validation (\$75/hour mass spec research scientist)	\$24,000
<sup>2</sup> Two week LIMS Implementation (\$60/hour health informaticist)	\$4,800
<sup>2</sup> Two hours per week of additional data review of GUAC & CRE (\$75/hour)	\$39,000
<sup>2</sup> Five hours per year contacting families regarding GAMT (\$60/hour)	\$1,500
<sup>2,3</sup> DNA Sequencing of three patients per year (\$500/test)	\$7,500
Total cost years 1-5:	\$76,900
<sup>4</sup> Infants Screened:	250,000
<b>COST PER SCREEN years 1-5:</b>	<b>\$0.31</b>
<b>COST TO IDENTIFY 1 case in 250,000; years 1-5:</b>	<b>\$76,900</b>
Total cost years 6-10:	\$48,100
<sup>4</sup> Infants Screened:	250,000
<b>COST PER SCREEN years 6-10:</b>	<b>\$0.19</b>
<b>COST TO IDENTIFY 1 case in 250,000; years 6-10:</b>	<b>\$48,100</b>

- Estimates based on Utah's annual birth rate of 50,000
- <sup>1</sup>Internal Standards from Cambridge Isotopes
- <sup>2</sup>All labor costs are based on actual Utah Public Health Lab costs and include indirect costs and overhead; frequency of DNA testing, data review, and contacting families was rounded up significantly to allow for fluctuations
- <sup>3</sup>UPHL cost for sequencing; a nice-to-have, but not necessary for screening and referral
- <sup>4</sup>GAMT Incidence rate based on Rare Genomes Project estimate; conservative compared to other estimates

*This document was created through a collaboration between the Association for Creatine Deficiencies, Utah Public Health Lab, ARUP Laboratories, and University of Utah Hospital.*

## Video Resources from the Association for Creatine Deficiencies

- Recording from the Association for Creatine Deficiencies Externally Led Patient-Focused Drug Development (EL-PFDD) meeting on Cerebral Creatine Deficiency Syndrome (CCDS).
  - [This is the story](#) of Susie and her daughter Daisy. Daisy was diagnosed with GAMT at age two. The video is 5 minutes long and starts at the 3:28:44 time mark.
- A [recording](#) of a parent and their children with GAMT deficiency.
  - This is a family's story of two children with GAMT – their daughter was diagnosed at age five, and the son was diagnosed at birth. This video aims to highlight the difference newborn screening can have for children with GAMT. The video is about 5 minutes long.



# Washington State Board of Health

Petition for Rulemaking – chapter 246-650 WAC, Newborn Screening,  
Guanidinoacetate methyltransferase (GAMT) deficiency

March 8, 2023



# **John Thompson, PhD, MPH, MPA**

Director, Department of Health (DOH) Newborn Screening Program

# **Molly Dinardo, MPH**

Health Policy Advisor, Washington State Board of Health (SBOH)



# Board Policy for Newborn Screening Criteria

Three guiding principles govern all aspects of the evaluation of a candidate condition for possible inclusion in Washington's Newborn Screening panel:

- Decision to add a screening test should be driven by evidence. For example, test reliability and available treatment have been scientifically evaluated, and those treatments can improve health outcomes for affected children.
- All children who screen positive should have reasonable access to diagnostic and treatment services.
- Benefits of screening for the disease or condition should outweigh harm to families, children, and society



# Newborn Screening Criteria

- Available screening technology
- Diagnostic testing and treatment available
- Prevention potential and medical rationale
- Public health rationale
- Cost-benefit/cost-effectiveness

# GAMT Qualifying Assumption

- Petition - Guanidinoacetate methyltransferase (GAMT) deficiency
  - Submitted February 24, 2023, requesting to add Guanidinoacetate methyltransferase (GAMT) deficiency to chapter 246-650 WAC as a condition for newborn screening
  - In January 2023, the Secretary of Health and Human approved the recommendation to add GAMT deficiency to the federal Recommended Uniform Screening Panel (RUSP)
- Preliminary review of five criteria
  - John Thompson – DOH
  - Molly Dinardo – SBOH

# GAMT Deficiency 101

- Inherited amino acid disorder
  - Autosomal recessive inheritance pattern
- Prevents the body from producing creatine
  - GAMT is an enzyme that helps make creatine from guanidinoacetate (GUAC)
  - Without enough creatine, organs in the body do not get enough energy (primary impacts on brain and muscles)
  - Elevated GUAC in the body has neurotoxic effects
- Signs and symptoms include:
  - Intellectual and developmental disabilities, delayed sitting or walking, delayed or limited speech ability, muscle weakness or low muscle tone, behavioral issues (anxiety, aggression, self-injury, hyperactivity), seizures, uncontrollable movements
- Children can begin showing signs and symptoms from early infancy to early childhood

# GAMT and Newborn Screening Programs

- States that currently screen for GAMT deficiency
  - Utah (since 2015)
  - New York (since 2018)
  - Michigan (since 2023 – validation took 3 years)
- Other population-based screening programs
  - British Columbia, Canada
  - Victoria, Australia

# Available Screening Technology

- Tandem mass spectrometry
- Measures guanidinoacetate (GUAC) and sometimes creatine in the blood
  - Utah, New York, British Colombia (Canada), Victoria (Australia)
  - Could be multiplexed with current testing in WA
- Prevalence: ~1:540,000 births (U.S. data)
- Test performance (~1.1 million screened in the U.S.)
  - Sensitivity: 100% (no known false negatives)
  - Specificity: 99.998%
  - Positive Predictive Value: 7.1%

# Diagnostic Testing and Treatment Available

- Diagnostic tests
  - Guanidinoacetate (GUAC) and low creatine in the blood after a positive NBS
  - Molecular testing can be helpful
  - Testing available at Seattle Children's or other reference labs
- Treatment
  - Lifelong treatment with dietary supplements and a low-protein diet
  - Management requires support from multidisciplinary biochemical genetics team
  - Infrastructure and treatment available at Seattle Children's hospital
    - Current staffing levels are low with recruitments in progress



# Prevention Potential and Medical Rationale

- Published evidence regarding early treatment outcomes is limited
- Case series and case reports suggest pre-symptomatic or earlier initiation of treatment is associated with better neurological outcomes
  - Federal review identified 6 publications and abstracts that looked at treatment initiation for children under 12 months
  - Case reports based on sibling pairs where the younger sibling is diagnosed at birth because of known family history of GAMT deficiency in an older sibling
  - Reports indicate reduced risk of intellectual disabilities and less frequent seizures
- Low risk of harm from treating patients that will not benefit from treatment

# Public Health Rationale

- Rarity of GAMT deficiency
  - Individuals that carry a nonworking GAMT gene may never receive a diagnosis
  - Gaps in data related to the epidemiology of GAMT, including the birth prevalence and whether there are higher risk populations
- Autosomal recessive inheritance pattern
  - Carriers of a nonworking GAMT gene can pass down a nonworking copy to their children
  - If both parents are carriers, there's a 1 in 4 chance their child will have GAMT deficiency
  - If parents have a child with GAMT deficiency, they still have a 1 in 4 chance of having another child with GAMT, and chances stay the same for future children

# Cost-Benefit/Cost-Effectiveness

- Federal Advisory Committee on Heritable Disorders in Newborns and Children (ACHDNC)
  - Limitations from evidence review report (6/2/2022):
    - “Limited data were available for many parameter inputs. Insufficient data were available to project long-term outcomes for GAMT deficiency, either through newborn screening or clinical identification.”
    - “Given the rare nature of newborn screened conditions, data are typically scarce for conditions being considered for addition to the recommended uniform screening panel. Compared with other conditions that have been nominated and considered for addition to the panel, data for the consideration of GAMT deficiency were considerably sparser.”
  - Without additional published data, any formal cost-benefit analysis would rely solely on expert opinion
  - Other, non-quantifiable considerations could be reviewed and discussed
    - Psychosocial benefits/harms including impact of ambiguous results
    - Adverse effects/unintended consequences of screening

# | THANK YOU

# Resources from Federal Review of GAMT deficiency for the RUSP:

- Evidence-Based Review of Newborn Screening for Guanidinoacetate Methyltransferase (GAMT) Deficiency: Final Report. Prepared for the Maternal and Child Health Bureau. June 02, 2022.
  - [Final Report](#)
  - Available Under [Recommendations to HHS Secretary](#)
- Recommendations to the Advisory Committee on Heritable Disorders in Newborns and Children (ACHDNC) for Newborn Screening of GAMT deficiency. May 12, 2022.
  - [PowerPoint Presentation for the ACHDNC Meeting](#)
  - Available under [ACHDNC's May 2022 Meeting Materials](#)

## **RCW 70.83.020**

### **Screening tests of newborn infants.**

(1) It shall be the duty of the department of health to require screening tests of all newborn infants born in any setting. Each hospital or health care provider attending a birth outside of a hospital shall collect and submit a sample blood specimen for all newborns no more than forty-eight hours following birth. The department of health shall conduct screening tests of samples for the detection of phenylketonuria and other heritable or metabolic disorders leading to intellectual disabilities or physical defects as defined by the state board of health: PROVIDED, That no such tests shall be given to any newborn infant whose parents or guardian object thereto on the grounds that such tests conflict with their religious tenets and practices.

(2) The sample required in subsection (1) of this section must be received by the department [of health] within seventy-two hours of the collection of the sample, excluding any day that the Washington state public health laboratory is closed.

[ 2014 c 18 § 1; 2010 c 94 § 18; 1991 c 3 § 348; 1975-'76 2nd ex.s. c 27 § 1; 1967 c 82 § 2.]

## **RCW 70.83.030**

### **Report of positive test to department of health.**

Laboratories, attending physicians, hospital administrators, or other persons performing or requesting the performance of tests for phenylketonuria shall report to the department of health all positive tests. The state board of health by rule shall, when it deems appropriate, require that positive tests for other heritable and metabolic disorders covered by this chapter be reported to the state department of health by such persons or agencies requesting or performing such tests.

[ 1991 c 3 § 349; 1979 c 141 § 113; 1967 c 82 § 3.]

## **RCW 70.83.050**

### **Rules and regulations to be adopted by state board of health.**

The state board of health shall adopt rules and regulations necessary to carry out the intent of this chapter.

[ 1967 c 82 § 5.]



**Washington State Board of Health  
Policy & Procedure**

<b>Policy Number:</b>	<b>2005-001</b>
<b>Subject:</b>	<b>Responding to Petitions for Rule-Making</b>
<b>Approved Date:</b>	<b>November 9, 2005 (revised June 13, 2012)</b>

**Policy Statement**

RCW 34.05.330 allows any person to petition a state agency to adopt, repeal, or amend any rule within its authority. Agencies have 60 days to respond. The agency can deny the request—explaining its reasons and, if appropriate, describing alternative steps it is prepared to take—or it must initiate rule-making. If denied, a petitioner can appeal the agency's decision to the Governor.

This policy defines who must be notified and consulted when the Board is petitioned, who may respond on behalf of the Board, and whether Board action is required.

- **Board Response:** When the Board receives a written petition for rule-making within its authority that clearly expresses the change or changes requested, the Board will respond within 60 days. The response may be made at the direction of the Board or under the authority of the Board's Chair. The response will be in the form of a letter from the Chair denying the petition or informing the petitioner the Executive Director has been directed to initiate rule-making.
- **Chair Authority:** The Chair may place a petition for rule-making on the agenda for a Board meeting scheduled to be held within 60 days of receipt of the petition. Alternatively, the Chair may respond to a rule-making petition without formal action by the full Board if the Board does not meet within 60 days of receipt of the petition or the Board chooses not to discuss and take action at a scheduled meeting.
- **Board Action:** A Board member who has been notified of a petition may request that the Chair place the petition on the agenda of a scheduled Board meeting for discussion and possible action by the Board. The Chair will honor the request unless asking the full Board to consider the petition would defer more pressing matters or prevent the Board from responding within 60 days. If the Chair declines, a Board member may introduce a motion to have the full Board consider the petition.

**Procedure**

- **Notifications:** Board staff, in consultation with the Executive Director, will respond to the petitioner within one business day acknowledging receipt of the petition and informing the petitioner whether the request is clear. The Executive Director or staff will notify Board members that a petition for rule-making has been received. This may be done by mentioning the petition during the next regularly scheduled Board meeting and by including a copy of the petition with materials distributed to Board members in attendance. If no meeting is scheduled before the 60-day response deadline, the Executive Director or staff will send an e-mail to Board members with an electronic version of the petition attached before action is taken by the Chair. The Chair or Executive Director shall also notify Board members of the response.
- **Consultation:** The Executive Director will recommend a response to the Chair. In developing this recommendation, the Executive Director will consult with the Board member who sponsored the most recent revisions to the rule being challenged or the appropriate policy committee. The Executive Director may also consult with appropriate representatives of the implementing agency or agencies, and may consult with stakeholders as appropriate.

# WASHINGTON STATE BOARD OF HEALTH

**Date:** March 8, 2023

**To:** Washington State Board of Health Members and Members of the Public

**From:** Tao Sheng Kwan-Gett, MD, MPH, Secretary's Designee

**Subject:** Department of Health Informational Briefing to the Board: Update on Child Immunization Rates in Washington

## Background and Summary:

The State Board of Health (Board) receives periodic updates from its partner agencies on topics related to the Board's statutory authority or legislative priorities. For the Board's March meeting, staff from the Department of Health's (Department) Office of Immunization will provide an update on child immunization rates in Washington. Historically, the Department has provided this routine update to the Board every few years.

The Department last gave this update at the Board's June 2021 meeting. Since then, the Board has had several new members appointed who have not yet received a briefing on this topic. The purpose of this presentation is to provide new members with an overview of Washington's immunization laws, rules, and requirements, the roles and responsibilities of the Department in this work, and updates on immunization rates for children.

I have invited the Department's Director of the Office of Immunization, Jamilia Sherls-Jones, DNP, MPH, RN, CDP, CPN, and School and Child Care Immunization Nurse Consultant, Katherine Graff, BSN, RN, to provide this informational update to Board Members.

Note that there will be no action taken at today's Board meeting on this topic. This is an educational briefing only for Board Members and the public.

## Staff

Molly Dinardo

To request this document in an alternate format or a different language, please contact the Washington State Board of Health at 360 236 4110 or by email at [wsboh@sboh.wa.gov](mailto:wsboh@sboh.wa.gov). TTY users can dial 711.

PO Box 47990 • Olympia, WA 98504-7990  
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# Immunization Briefing

March 8, 2023

## *Washington State Board of Health Meeting*

The Office of Immunization at the Department of Health is looking forward to returning to our pre-pandemic routine of providing the State Board of Health with periodic updates on the status of vaccinations for child-care and school-age children in Washington state. This will be an educational briefing only and no action will be taken. The briefing will include the following content:

- Overview of immunization law and rules
- Overview of immunization requirements for schools and childcares
- Certificate of Immunization Status or (CIS) form
- Allowable exemptions from the immunization requirements and the Certificate of Exemption (COE) form
- Data analysis of immunization coverage in school-aged population (pre- to post-pandemic timeframes) highlighting:
  - School-age Immunization Information System (IIS) data at vaccination milestones: 19-35 months, 4-10 years\*, 11-12 years, 13-17 years
  - Bi-annual estimates during a pre-to-post pandemic timeframe: December 2018 thru December 2022
  - All required immunizations for each milestone age group

\*Note: 4-6 years is the standard milestone age group but was expanded to include all grade school ages.

[www.doh.wa.gov](http://www.doh.wa.gov)

[oicp@doh.wa.gov](mailto:oicp@doh.wa.gov)

360-236-3595

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# CHILDCARE AND SCHOOL AGE IMMUNIZATIONS BRIEFING

Office of Immunization

# Presenters



**Katherine Graff BSN, RN**

*School and Child Care Immunization  
Nurse Consultant*



**Jamilia Sherls-Jones, DNP, MPH, RN, CPN, CDP**

*Office of Immunization Director*

Office of Immunization

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# Today's Presentation

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- Immunization Law and Rules
- Immunization Requirements
- Certificate of Immunization Status (CIS)
- Certificate of Exemption (COE)
- Data analysis of immunization coverage in school-aged population (pre- to post-pandemic timeframes)



# IMMUNIZATION LAW AND RULES

## RCW & WAC

# Revised Code of Washington (RCW)

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WA State Legislature passes legislation which is signed into law by the Governor.

## **[28A.210 RCW](#)--Health - screening and requirements:**

- [28A.210.060](#)—through [28A.210.170](#)

# Washington Administrative Code (WAC)

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The immunization laws give the WA State Board of Health the authority to determine the immunization rules.

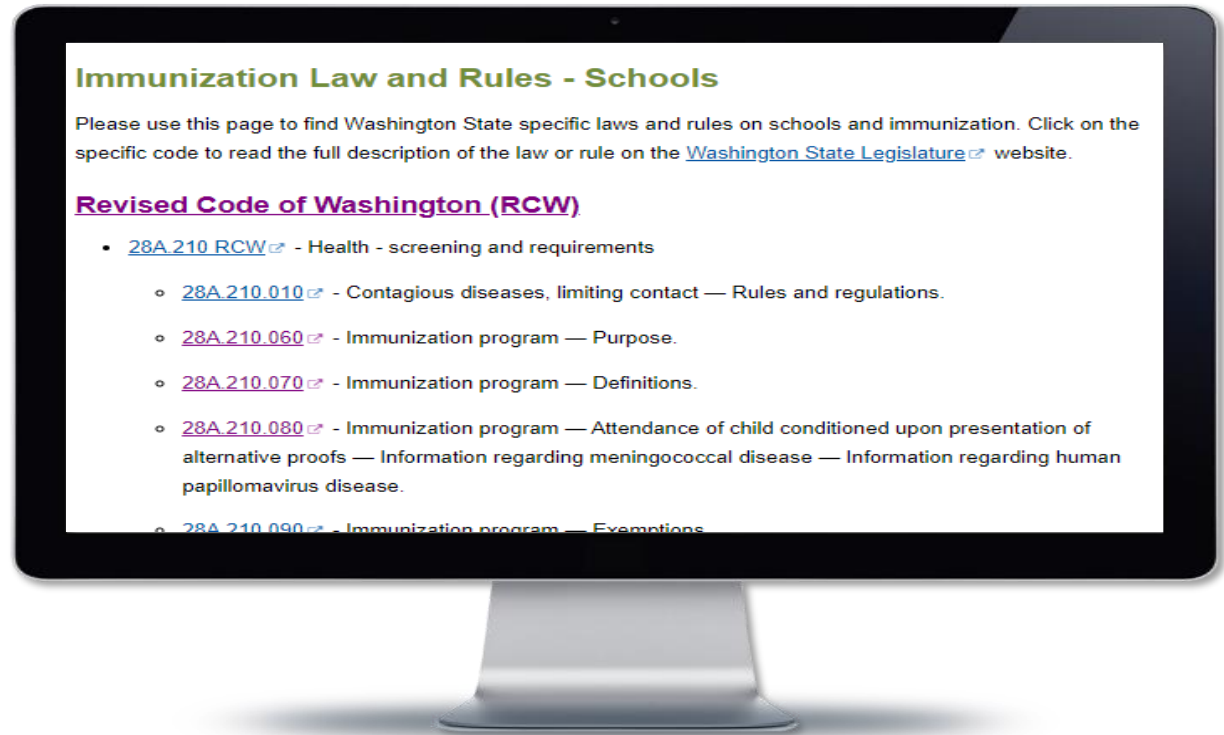
[246-105 WAC](#) **Immunization of childcare and school children against certain vaccine-preventable diseases**

- [246-105-010](#) - through [246-105-090](#)

## Links to the RCW and WAC

The School and Child Care Immunization page: has links to the RCWs and WACs:

[www.doh.wa.gov/SCCI](http://www.doh.wa.gov/SCCI)





# IMMUNIZATION REQUIREMENTS



**Table 1** Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger  
United States, 2019

These recommendations must be read with the Notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Table 1. To determine minimum intervals between doses, see the catch-up schedule (Table 2). School entry and adolescent vaccine age groups are shaded in gray.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16 yrs	17-18 yrs				
Hepatitis B (HepB)	1 <sup>st</sup> dose	2 <sup>nd</sup> dose			3 <sup>rd</sup> dose																
Rotavirus (RV) RV1 (2-dose series); RV5 (3-dose series)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	See Notes																
Diphtheria, tetanus, & acellular pertussis (DTaP: <7 yrs)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose	4 <sup>th</sup> dose				5 <sup>th</sup> dose											
<i>Haemophilus influenzae</i> type b (Hib)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	See Notes	3 <sup>rd</sup> or 4 <sup>th</sup> dose, See Notes															
Pneumococcal conjugate (PCV13)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose	4 <sup>th</sup> dose															
Inactivated poliovirus (IPV: <18 yrs)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose						4 <sup>th</sup> dose										
Influenza (IIV) or Influenza (LAIV)					Annual vaccination 1 or 2 doses								Annual vaccination 1 dose only								
											Annual vaccination 1 or 2 doses		Annual vaccination 1 dose only								
Measles, mumps, rubella (MMR)					See Notes	1 <sup>st</sup> dose						2 <sup>nd</sup> dose									
Varicella (VAR)						1 <sup>st</sup> dose						2 <sup>nd</sup> dose									
Hepatitis A (HepA)					See Notes	2-dose series, See Notes															
Meningococcal (MenACWY-D ≥9 mos; MenACWY-CRM ≥2 mos)			See Notes											1 <sup>st</sup> dose		2 <sup>nd</sup> dose					
Tetanus, diphtheria, & acellular pertussis (Tdap: ≥7 yrs)													Tdap								
Human papillomavirus (HPV)														See Notes							
Meningococcal B													See Notes								
Pneumococcal polysaccharide (PPSV23)										See Notes											
<div><div></div> Range of recommended ages for all children</div>																		<div></div> Range of recommended ages for catch-up immunization	<div></div> Range of recommended ages for certain high-risk groups	<div></div> Range of recommended ages for non-high-risk groups that may receive vaccine, subject to individual clinical decision-making	<div></div> No recommendation

Range of recommended ages for all children

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

Range of recommended ages for non-high-risk groups that may receive vaccine, subject to individual clinical decision-making

No recommendation

# Recommended vs. Required

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## ACIP Recommended

Hepatitis B  
DTaP/Tdap  
IPV  
MMR  
Varicella  
PCV  
Hib  
Hepatitis A  
HPV  
Meningococcal  
Flu  
Rotavirus  
COVID-19



## WA State Required

Hepatitis B  
DTaP/Tdap  
IPV  
MMR  
Varicella  
PCV (until 5 years old)  
Hib (until 5 years old)

# Vaccines Required for Child Care 2022-2023

## Vaccines Required for Child Care



	Hepatitis B	DTaP (Diphtheria, Tetanus, Pertussis)	Hib ( <i>Haemophilus influenzae</i> type B)	Polio	PCV (Pneumococcal Conjugate)	MMR (Measles, mumps rubella)	Varicella (Chickenpox)
By 3 Months	2 doses	1 dose	1 dose	1 dose	1 dose	Not routinely given before 12 months of age	Not routinely given before 12 months of age
By 5 Months	2 doses	2 doses	2 doses	2 doses	2 doses		
By 7 Months	2 doses	3 doses	2 or 3 doses (depending on vaccine)	2 doses	3 doses		
By 16 Months	2 doses	3 doses	3 or 4 doses (depending on vaccine)	2 doses	4 doses	1 dose	1 dose
By 19 Months	3 doses	4 doses	3 or 4 doses (depending on vaccine)	3 doses	4 doses	1 dose	1 dose
By 7 years or preschool/ school entry at ≥ 4 years*	3 doses	5 doses	Not routinely given to children age 5 years and older	4 doses	Not routinely given to children age 5 years and older	2 doses	2 doses

\*Children attending Preschool-12th grade must meet the immunization requirements for their grade in school.

Find the Preschool-12th grade requirement chart and in the Individual Vaccine Requirements Summary immunization requirements section of the web page: [www.doh.wa.gov/SCCI](http://www.doh.wa.gov/SCCI)

See the Minimum Age and Interval Table on page 2 for required minimum age and spacing information of vaccine doses.

Find information on other vaccines that are recommended, but not required, for child care/preschool attendance at: [www.immunize.org/cdc/schedules](http://www.immunize.org/cdc/schedules).

To request this document in another format, call 1-800-525-0127.

Deaf or hard of hearing customers, please call 711 (Washington Relay) or email [civil.rights@doh.wa.gov](mailto:civil.rights@doh.wa.gov).

DOH 348-053 Dec 2021

# Vaccines Required for Preschool-12<sup>th</sup> Grade School 2022-2023

## Parents— Are Your Kids Ready for School?

### Required Immunizations for School Year 2022-2023



**Instructions:** To see which vaccines are required for school, find your child's grade in the first column. Look at the matching row across the page to find the amount of vaccines required for your child to enter school.

	<b>DTaP/Tdap</b> (Diphtheria, Tetanus, Pertussis)	<b>Hepatitis B</b>	<b>Hib</b> ( <i>Haemophilus influenzae</i> type B)	<b>MMR</b> (Measles, mumps rubella)	<b>PCV</b> (Pneumococcal Conjugate)	<b>Polio</b>	<b>Varicella</b> (Chickenpox)
<b>Preschool</b> Age 19 months to <4 years on 09/01/2022	4 doses DTaP	3 doses	3 or 4 doses* (depending on vaccine)	1 dose	4 doses*	3 doses	1 dose**
<b>Preschool/ Transitional Kindergarten</b> Age ≥4 years on 09/01/2022	5 doses DTaP*	3 doses	3 or 4 doses* (depending on vaccine) (Not required at age ≥5 years)	2 doses	4 doses* (Not required at age ≥5 years)	4 doses*	2 doses**
<b>Kindergarten through 6th</b>	5 doses DTaP*	3 doses	Not Required	2 doses	Not Required	4 doses*	2 doses**
<b>7th through 9th</b>	5 doses DTaP* Plus Tdap at age ≥10 years	3 doses	Not Required	2 doses	Not Required	4 doses*	2 doses**
<b>10th through 12th</b>	5 doses DTaP* Plus Tdap at age ≥7 years	3 doses	Not Required	2 doses	Not Required	4 doses*	2 doses**

\*Vaccine doses may be acceptable with fewer than listed depending on when they were given. \*\*Health care provider verification of history of chickenpox disease is also acceptable. Students must get vaccine doses at the correct timeframes to be in compliance with school requirements. Talk to your health care provider or school staff if you have questions. Find information on other important vaccines that are not required for school at: [www.immunize.org/cdc/schedules](http://www.immunize.org/cdc/schedules).

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DOH 348-295 April 2022



## CERTIFICATE OF IMMUNIZATION STATUS (CIS)

## Certificate of Immunization Status (CIS)

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Before a child may attend a school or child care center, a parent must provide proof of the required immunizations or immunity using a department-approved Certificate of Immunization Status (CIS) form. [WAC 246-105-050](#)

The CIS form is created by the Department of Health.  
(it should not be recreated in an electronic health record)



## Acceptable CIS Versions

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There are three acceptable versions of the CIS:

- Printed from and medically verified by the WA Immunization Information System (no provider or parent validation signature needed):
  - (1) Validated CIS
  - (2) CIS printed from MyIR
- Hardcopy, handwritten CIS verified as accurate by:
  - Health care provider signature; or
  - School nurse, administrator, childcare health consultant (or their designee) signature that the information on the CIS matches attached medical vaccination records


\_\_\_\_\_

### Assessment of Required Immunizations for CHILD CARE BY 19 MONTHS

- Complete
- Not Complete
- Conditional

- Child Care by age
- Preschool: 19 months-3 years
- Preschool-TK: 4 years
- Grade K-6
- Grade 7-9
- Grade 10-12

# Hardcopy CIS

		<h2 style="margin: 0;">Certificate of Immunization Status (CIS)</h2>		Reviewed by: _____ Date: _____ Signed COE on File? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Please print. See back for instructions on how to fill out this form or get it printed from the Washington State Immunization Information System.					
Child's Last Name:		First Name:		Middle Initial:	
Birthdate (MM/DD/YYYY):					
I give permission to my child's school/child care to add immunization information into the Immunization Information System to help the school maintain my child's record.			Conditional Status Only: I acknowledge that my child is entering school/child care in conditional status. For my child to remain in school, I must provide required documentation of immunization by established deadlines. See back for guidance on conditional status.		
X _____ Parent/Guardian Signature Date			X _____ Parent/Guardian Signature Required if Starting in Conditional Status Date		
<div style="display: flex; justify-content: space-between;"> <span>▲ Required for School • Required Child Care/Preschool</span> <span>MM/DD/YY MM/DD/YY MM/DD/YY MM/DD/YY MM/DD/YY MM/DD/YY</span> </div>					
<b>Required Vaccines for School or Child Care Entry</b>					
•▲ DTaP (Diphtheria, Tetanus, Pertussis)					
▲ Tdap (Tetanus, Diphtheria, Pertussis) (grade 7+)					
•▲ DT or Td (Tetanus, Diphtheria)					
•▲ Hepatitis B					
• Hib ( <i>Haemophilus influenzae type b</i> )					
•▲ IPV (Polio) (any combination of IPV/OPV)					
•▲ OPV (Polio)					
•▲ MMR (Measles, Mumps, Rubella)					
• PCV/PPSV (Pneumococcal)					
•▲ Varicella (Chickenpox) <input type="checkbox"/> History of disease verified by IIS					
<b>Recommended Vaccines (Not Required for School or Child Care Entry)</b>					
COVID-19					
Flu (Influenza)					
Hepatitis A					
HPV (Human Papillomavirus)					
MCV/MPSV (Meningococcal Disease types A, C, W, Y)					
MenB (Meningococcal Disease type B)					
Rotavirus					
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">           I certify that the information provided on this form is correct and verifiable.         </div> <div style="width: 40%;">           Health Care Provider or School Official Name: _____ Signature: _____ Date: _____            If verified by school or child care staff the medical immunization records must be attached to this document.         </div> <div style="width: 30%;"></div> </div>					
<b>Documentation of Disease Immunity (Health care provider use only)</b>					
If the child named in this CIS has a history of varicella (chickenpox) disease or can show immunity by blood test (titer), it must be verified by a health care provider.					
I certify that the child named on this CIS has: <input type="checkbox"/> A verified history of varicella (chickenpox) disease. <input type="checkbox"/> Laboratory evidence of immunity (titer) to disease(s) marked below.					
<input type="checkbox"/> Diphtheria		<input type="checkbox"/> Hepatitis A		<input type="checkbox"/> Hepatitis B	
<input type="checkbox"/> Hib		<input type="checkbox"/> Measles		<input type="checkbox"/> Mumps	
<input type="checkbox"/> Rubella		<input type="checkbox"/> Tetanus		<input type="checkbox"/> Varicella	
<input type="checkbox"/> Polio (all 3 serotypes must show immunity)					
▶ _____ Licensed Health Care Provider Signature Date					
▶ _____					



EXEMPTIONS FROM THE SCHOOL AND CHILDCARE  
IMMUNIZATION REQUIREMENTS  
AND THE  
CERTIFICATE OF EXEMPTION (COE)

## Certificate of Exemption (COE)

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A child may be exempted from one or more required immunizations, [RCW 28A.210.090](#).

To request an exemption, a parent/guardian must turn in a completed and signed Certificate of Exemption (COE) to the school or childcare.

The COE is created by the Department of Health.

It can be downloaded from this website: <https://www.doh.wa.gov/SCCI>

Exemption forms or letters from other states are not acceptable.

## Types of Exemptions for Children

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- Personal or philosophical exemption
  - not allowed for measles, mumps or rubella immunization requirements
- Religious
- Religious membership
- Medical





## Certificate of Exemption—Personal/Religious

For School, Child Care, and Preschool Immunization Requirements

Child's Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_ Middle Initial: \_\_\_\_\_ Birthdate (MM/DD/YYYY): \_\_\_\_\_

**NOTICE:** A parent or guardian may exempt their child from the vaccinations listed below by submitting this completed form to the child's school and/or child care. A person who has been exempted from a vaccination is considered at risk for the disease or diseases for which the vaccination offers protection. An exempted child/student may be excluded from school or child care settings and activities during an outbreak of the disease that they have not been fully vaccinated against. Vaccine-preventable diseases still exist, and can spread quickly in school and child care settings. Immunization is one of the best ways to protect people from getting and spreading diseases that may result in serious illness, disability, or death.

**Personal/Philosophical or Religious Exemption**  
I am exempting my child from the requirement my child be vaccinated against the following disease(s) to attend school or child care. (Select an exemption type and the vaccinations you wish to exempt your child from):

PERSONAL/PHILOSOPHICAL EXEMPTION*			
<input type="checkbox"/> Diphtheria	<input type="checkbox"/> Hepatitis B	<input type="checkbox"/> Hib	<input type="checkbox"/> Pneumococcal
<input type="checkbox"/> Polio	<input type="checkbox"/> Pertussis (whooping cough)	<input type="checkbox"/> Tetanus	<input type="checkbox"/> Varicella (chickenpox)

\*Measles, mumps, or rubella may not be exempted for personal/philosophical reasons per state law

RELIGIOUS EXEMPTION			
<input type="checkbox"/> Diphtheria	<input type="checkbox"/> Hepatitis B	<input type="checkbox"/> Hib	<input type="checkbox"/> Pneumococcal
<input type="checkbox"/> Polio	<input type="checkbox"/> Pertussis (whooping cough)	<input type="checkbox"/> Tetanus	<input type="checkbox"/> Varicella (chickenpox)
<input type="checkbox"/> Measles	<input type="checkbox"/> Mumps	<input type="checkbox"/> Rubella	

**Parent/Guardian Declaration**  
One or more of the required vaccines are in conflict with my personal, philosophical, or religious beliefs. I have discussed the benefits and risks of immunizations with the health care practitioner (signed below). I have been told if an outbreak of vaccine-preventable disease occurs for which my child is exempted, my child may be excluded from their school or child care for the duration of the outbreak. The information on this form is complete and correct.

☒ Parent/Guardian Name (print) \_\_\_\_\_ Parent/Guardian Signature \_\_\_\_\_ Date \_\_\_\_\_

**Health Care Practitioner Declaration**  
I have discussed the benefits and risks of immunizations with the parent/legal guardian as a condition for exempting their child. I certify I am a qualified MD, ND, DO, ARNP, or PA licensed in Washington State.

☒ Licensed Health Care Practitioner Name (print) \_\_\_\_\_ Licensed Health Care Practitioner Signature \_\_\_\_\_ Date \_\_\_\_\_

☐ MD ☐ ND ☐ DO ☐ ARNP ☐ PA Washington License # \_\_\_\_\_

### RELIGIOUS MEMBERSHIP EXEMPTION

Complete this section ONLY if you belong to a church or religion that objects to the use of medical treatment. Use the section above if you have a religious objection to vaccinations but the beliefs or teachings of your church or religion allow for your child to be treated by medical professionals such as doctors and nurses.

### Parent/Guardian Declaration

I am the parent or legal guardian of the above-named child. I affirm I am a member of a church or religion whose teaching does not allow health care practitioners to give medical treatment to my child. I have been told if an outbreak of vaccine-preventable disease occurs for which my child is exempted, my child may be excluded from their school or child care for the duration of the outbreak. The information on this form is complete and correct.

☒ Parent/Guardian Name (print) \_\_\_\_\_ Parent/Guardian Signature \_\_\_\_\_ Date \_\_\_\_\_

If you have a disability and need this form in a different format please call 1-800-525-0127 (TDD/TTY Call 711).

DOH-348-106 October 2019



## Certificate of Exemption—Medical

For School, Child Care, and Preschool Immunization Requirements

Child's Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_ Middle Initial: \_\_\_\_\_ Birthdate (MM/DD/YYYY): \_\_\_\_\_

**NOTICE:** This form may be used to exempt a child from the requirement of vaccination when a health care practitioner has determined specific vaccination is not advisable for the child for medical reasons. This form must be completed by a health care practitioner and signed by the parent/guardian. An exempted child/student may be excluded from school or child care during an outbreak of the disease they have not been fully vaccinated against. Vaccine preventable diseases still exist, and can spread quickly in school and child care settings.

**Medical Exemption**  
A health care practitioner may grant a medical exemption to a vaccine required by rule of the Washington State Board of Health only if in their judgment, the vaccine is not advisable for the child. When it is determined that this particular vaccine is no longer contraindicated, the child will be required to have the vaccine (RCW 28A.210.090). Providers can find guidance on medical exemptions by reviewing Advisory Committee on Immunization Practices (ACIP) recommendations via the Centers for Disease Control and Prevention publication, "Guide to Vaccine Contraindications and Precautions," or the manufacturer's package insert. The ACIP guide can be found at: [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html).

Please indicate which vaccination the medical exemption is referring to by disease. If the patient is not exempt from certain vaccinations, mark "not exempt."

Disease	Not Exempt	Permanent Exempt	Temporary Exempt	Expiration Date for Temporary Medical
Diphtheria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hepatitis B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hib	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Measles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mumps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pertussis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pneumococcal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Polio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rubella	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tetanus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Varicella	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Health Care Practitioner Declaration**  
I declare that vaccination for the disease(s) checked above is/are not advisable for this child. I have discussed the benefits and risks of immunizations with the parent/legal guardian as a condition for exempting their child. I certify I am a qualified MD, ND, DO, ARNP or PA licensed in Washington State, and the information provided on this form is complete and correct.

☒ Licensed Health Care Practitioner Name (print) \_\_\_\_\_ Licensed Health Care Practitioner Signature \_\_\_\_\_ Date \_\_\_\_\_

☐ MD ☐ ND ☐ DO ☐ ARNP ☐ PA Washington License # \_\_\_\_\_

**Parent/Guardian Declaration**  
I have discussed the benefits and risks of immunizations with the health care practitioner granting this medical exemption. I have been told if an outbreak of vaccine-preventable disease occurs for which my child is exempted, my child may be excluded from their school or child care for the duration of the outbreak. The information on this form is complete and correct.

☒ Parent/Guardian Name (print) \_\_\_\_\_ Parent/Guardian Signature \_\_\_\_\_ Date \_\_\_\_\_

If you have a disability and need this form in a different format please call 1-800-525-0127 (TDD/TTY Call 711).

DOH-348-106 October 2019

## Education Requirement

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Philosophical/Personal and Religious Exemptions must have the signature of a health care practitioner that he or she:

*“provided the signator with information about the benefits and risks of immunization to the child.”*

A health care practitioner is a physician (MD, DO), Naturopath (ND), Physician Assistant (PA) or Advanced Registered Nurse Practitioner (ARNP) licensed in WA State.

A health care practitioner who, in good faith, signs the statement about the education is immune from civil liability for providing the signature. [RCW28A.210.090](#)

Clinician and school staff have no role in assessing a parent’s personal or religious beliefs.

# School and Child Care Immunization Page

Website:

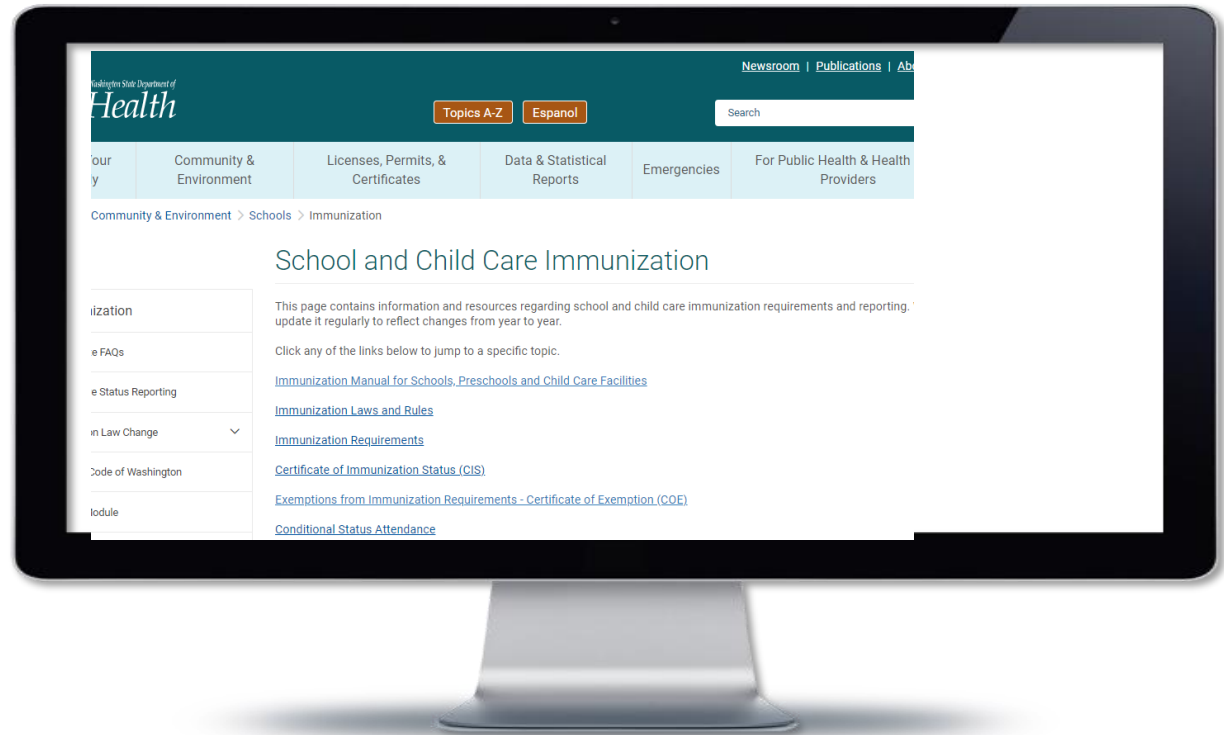
[www.doh.wa.gov/SCCI](http://www.doh.wa.gov/SCCI)

Questions?

Feedback!

Email us at:

[Olschools@doh.wa.gov](mailto:Olschools@doh.wa.gov)





# CHILDCARE AND SCHOOL AGE IMMUNIZATION DATA UPDATE

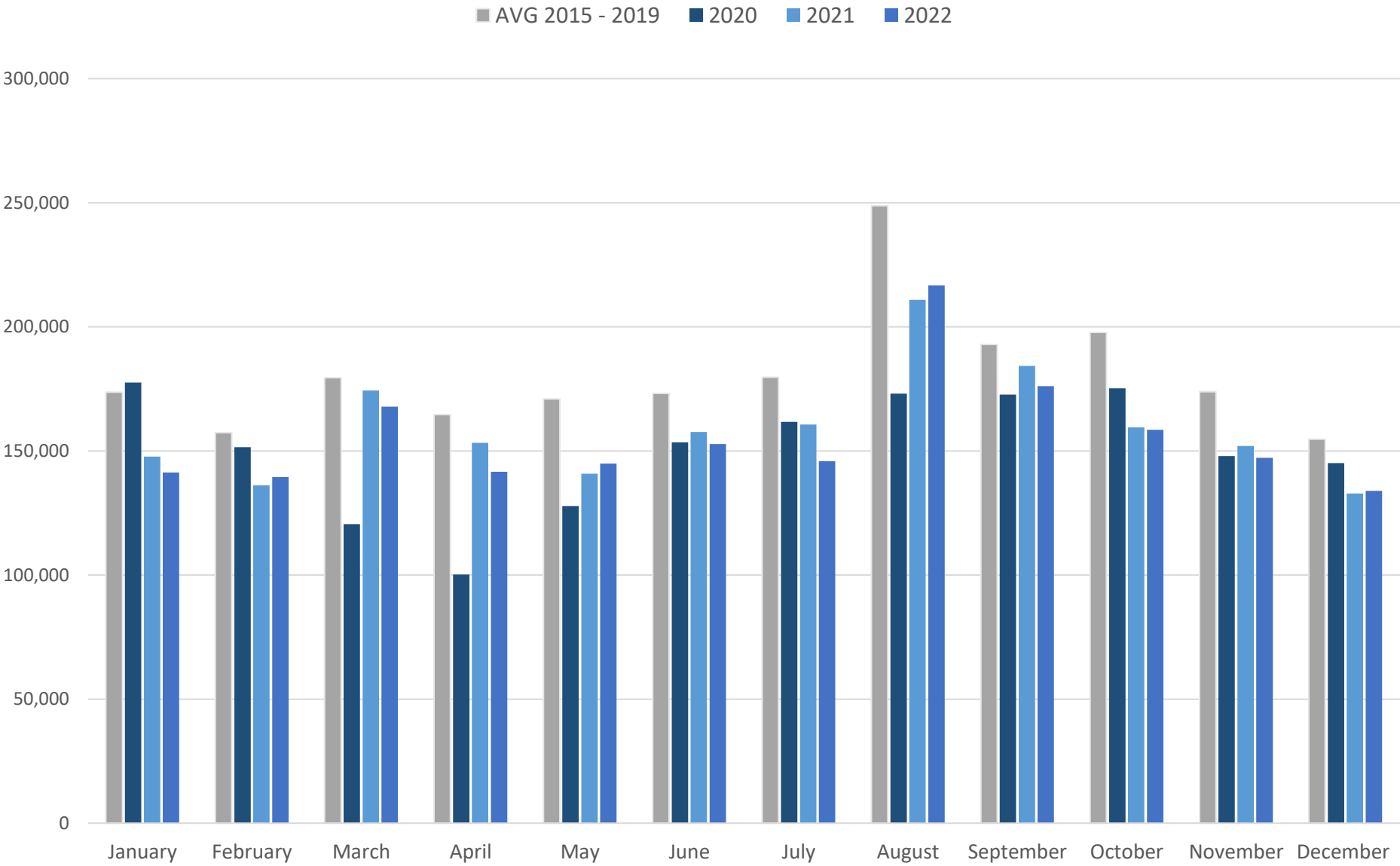
# The Washington State Immunization Information System (IIS)

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WADOH routinely uses immunization data from the Washington State Immunization Information System (WAIIS):

- A lifetime registry for WA resident immunization data
- Licensed healthcare providers track immunizations
- Considered the most complete and independent source of medically verified immunization data for WA state
- Different from data used in school reporting
  - During the COVID-19 pandemic, school reporting was considered less reliable

Monthly Vaccines\* Administered for Individuals 0 through 18 years old in Washington  
State Comparing Average Number in 2015-2019 with 2020, 2021, 2022



Data source: WA State Immunization Information System; all vaccines reported as of 01/17/2023

\*Does not include Influenza and COVID-19 vaccine doses administered



# Childcare and School Age Immunizations: Coverage Data

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Reviewed school-age IIS data at vaccination milestones:

- 19-35m, 4-10y\*, 11-12y, 13-17y

Pre-to-post pandemic timeframe:

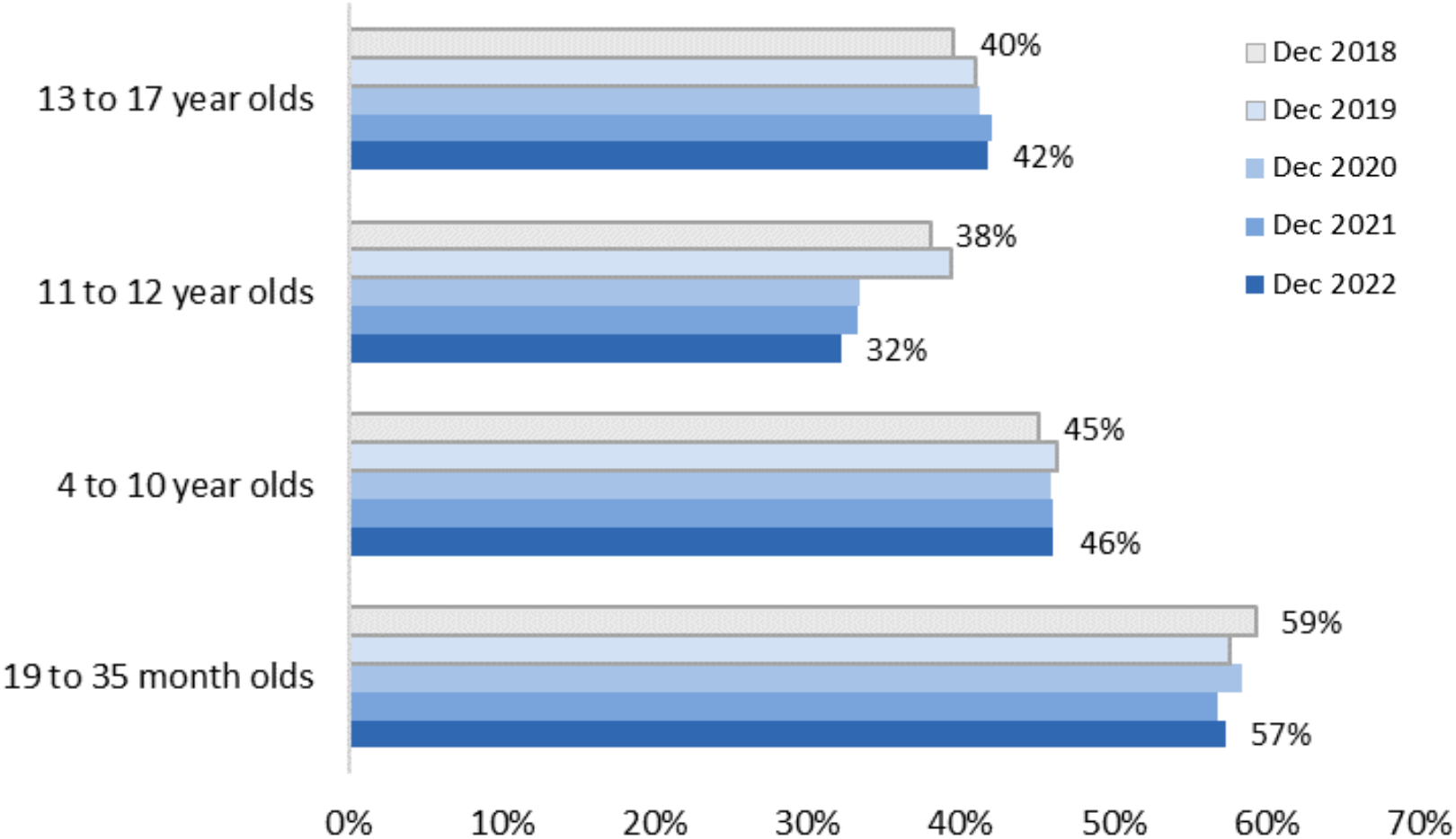
- December 2018-December 2022

Additional data and information can be found on the WADOH immunization data dashboard & the 2021 report of effects of COVID-19 pandemic on WA immunization rates:

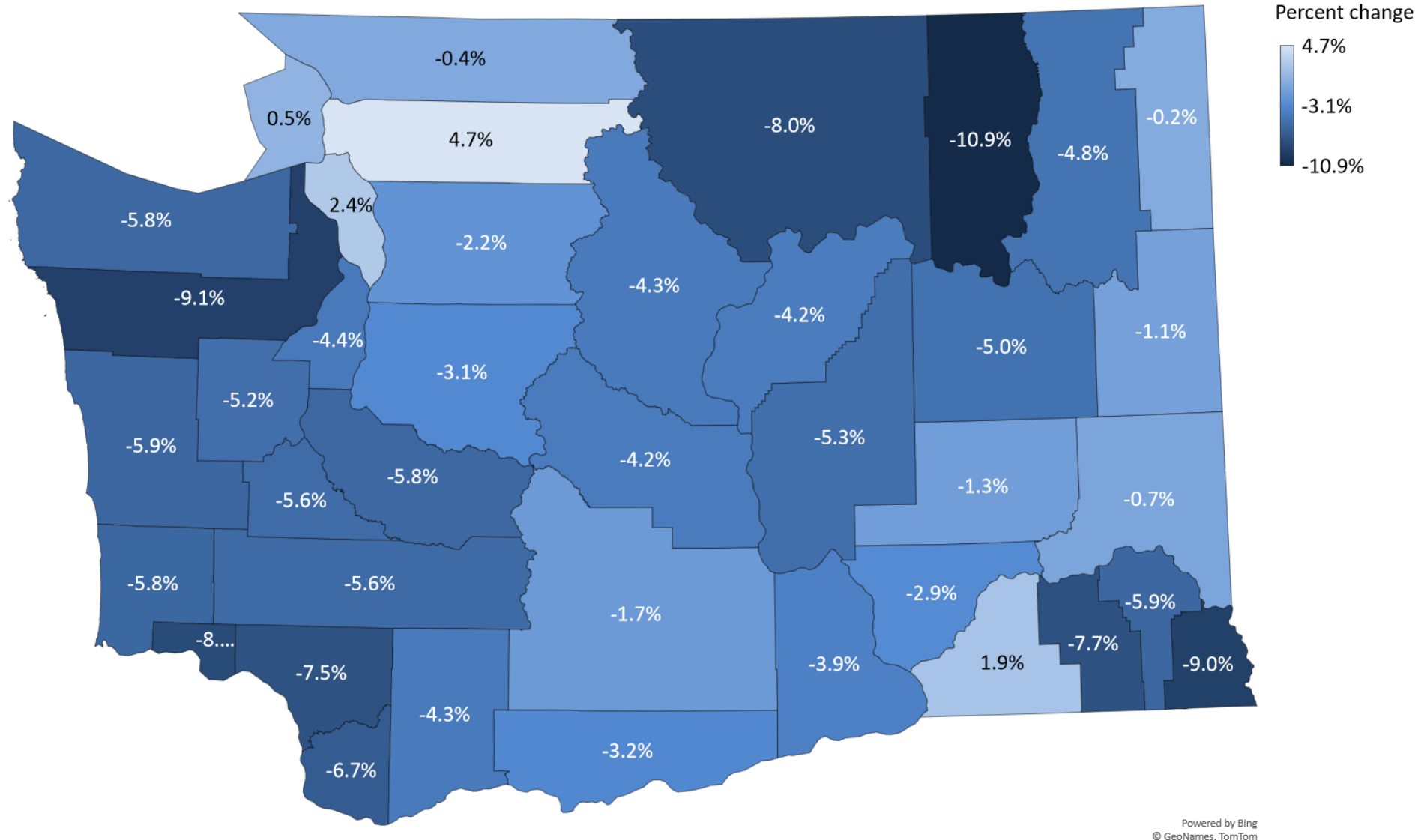
- [Immunization Measures by County Dashboard | Washington State Department of Health](#)
- [348-867 Childhood Immunization Report \(wa.gov\)](#)

\*4-6y is the standard milestone age group but was expanded to include all school ages.

Coverage rates for children fully vaccinated are behind pre-pandemic levels for 19- to 35-month-olds and more so for 11- to 12-year-olds.



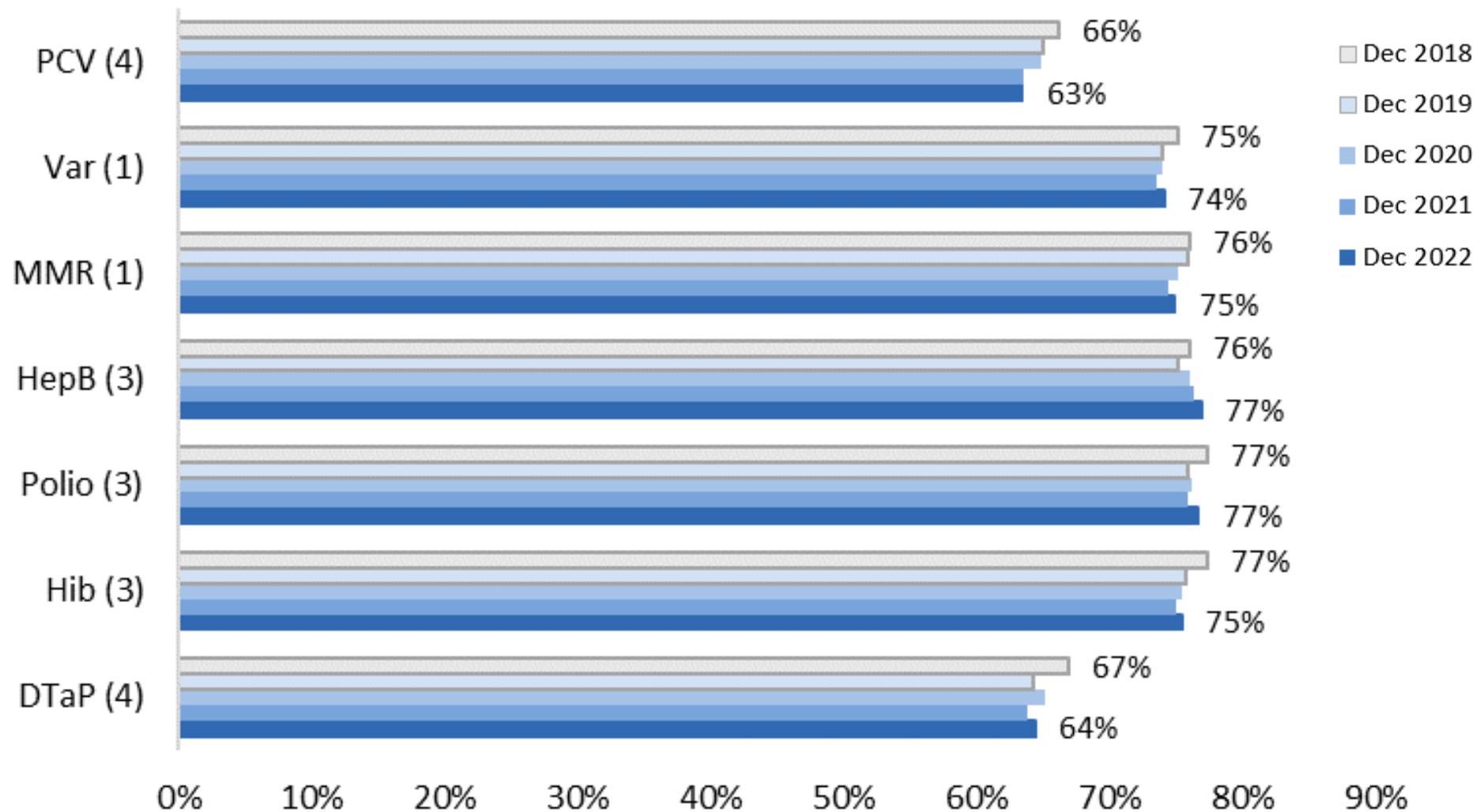
The change from December 2018 to December 2022 in the percentage of children fully vaccinated varies across the state.





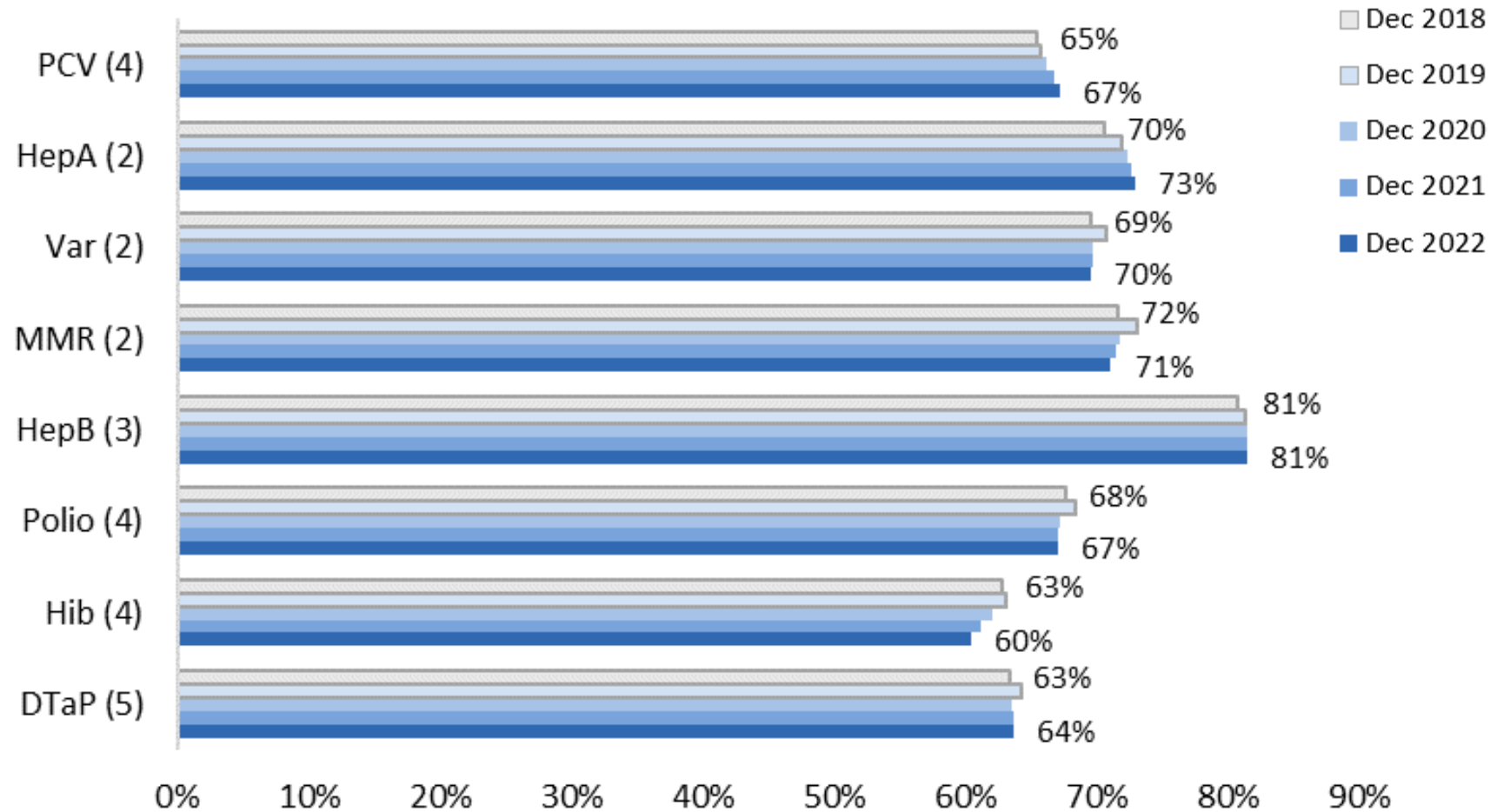
# INDIVIDUAL VACCINE COVERAGE BY VACCINATION MILESTONE

Coverage rates for 19- to 35-month-olds are behind pre-pandemic levels for most individual vaccines, with the largest gaps seen in DTaP and PCV (3%).



Children should complete the 4:3:1:3:3:1:4\* immunization series by 19 months. The state and national goal is for 80% of young children to complete the immunization series. Additionally, the state and national goal for this population to complete each individual vaccine component on time is 90%

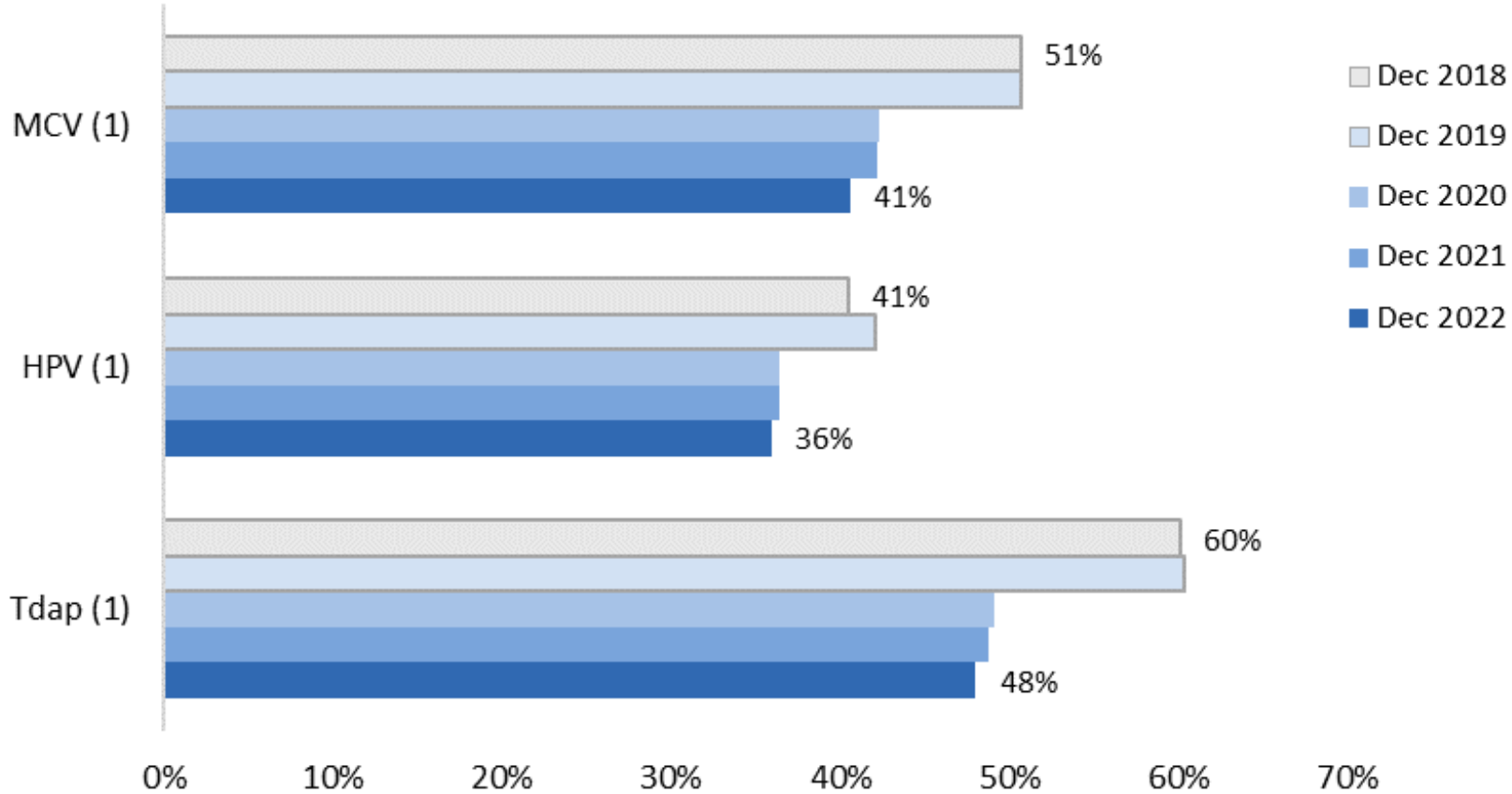
Coverage rates 4- to 10-year-olds are relatively similar to pre-pandemic levels.



Children should complete the 5:4:4:3:2:2:2:4\* immunization series by 4 years of age. The state and national goal is for 80% of young children to complete the immunization series. Additionally, the state and national goal for this population to complete each individual vaccine on time is 90%.

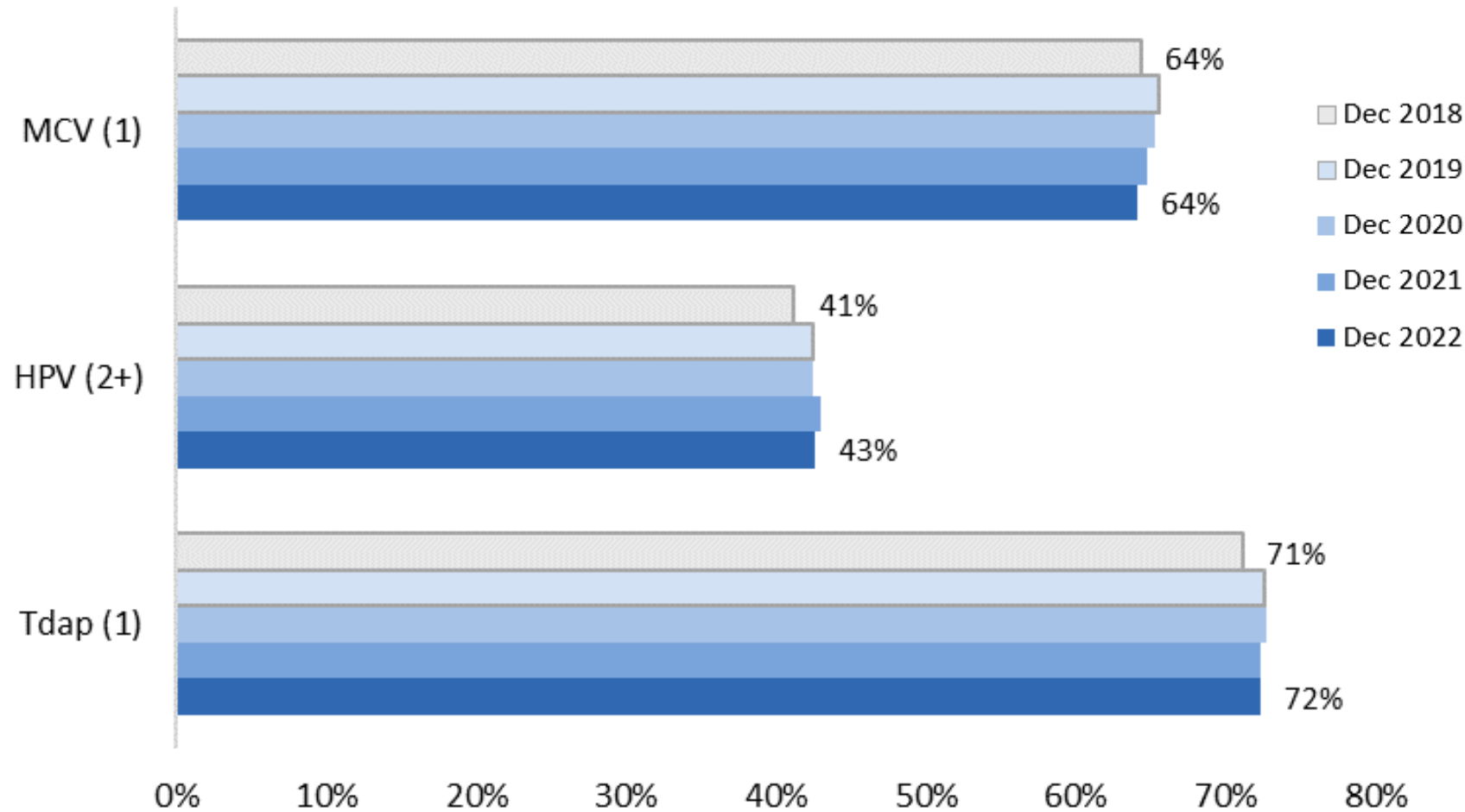


Coverage rates in 11- to 12-year-olds are behind pre-pandemic levels for each vaccine, from 5% lower for HPV, to 10% lower for MCV, and 12% lower for Tdap.



Adolescent immunization series initiation (1:1:1\*) and completion (1:1:UTD\*\*) coverage among 11-12 year olds. Adolescents should receive the MCV vaccine and first dose HPV vaccine when they receive the Tdap booster required for 7th grade entry. The state and national goal is for 80% of 15 year-olds to complete the immunization series. Additionally, the state and national goal is for 90% of 15 year-olds to complete for each individual vaccine.

Coverage rates in 13- to 17-year-olds are consistent with pre-pandemic levels.



Adolescent immunization series initiation (1:1:1\*) and completion (1:1:UTD\*\*) coverage among 13-17 year olds. Adolescents should complete the 1:1:UTD series by age 13. The state and national goal is for 80% of adolescents to complete these immunizations by the age 15.

## Key Takeaways

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- Absolute changes in vaccination coverage rates from Dec 2018-2022 were most noticeable for the 11- to 12-year-olds.
- Since December 2021, vaccination coverage rates have started to stabilize, with some vaccines showing small increases.
- Rates for all vaccines in the 11-12 year-old series (Tdap, HPV, MCV) and in HPV in the 13-17 year olds remain the lowest. Future efforts should be targeted to these areas.

## DOH Strategies to Promote Pediatric Immunizations

- **Immunization Rate Improvement Program for LHJs**
- **Immunization Quality Improvement Program**
- **Address Gaps in Vaccine Access**
- **Childhood Vaccine Program Enrollment Promotion**

# DOH Strategies to Promote Pediatric Immunizations

## Immunization Rate Improvement Program for LHJs

- ❑ Supports activities to increase in immunization coverage rates for childhood populations & access to childhood vaccines.
  - Total Statewide Funding: \$498,755K
- ❑ 25 local health jurisdictions actively participating in the program.
- ❑ Leverages opportunities for collaboration with community partners such as school staff, students, childcare facilities, VFC Providers, WIC programs, & community organizations to implement immunization promotion activities.

# DOH Strategies to Promote Pediatric Immunizations

## Immunization Quality Improvement Program

- ❑ 96 IQIP visits-initiated July-December 2022 with goal of 234 by June 30, 2023.
- ❑ Collaboration with WCAAP for WACHIP program.
- ❑ Over 40 clinics received training on IIS Immunization QI tools (reminder/recall, coverage rate report, population mgmt.)
- ❑ Introduced the Immunize WA Bronze award for childhood 4313314 series to encourage on time vaccination, in addition to Gold/Silver Level for HEDIS Combo 10.



# DOH Strategies to Promote Pediatric Immunizations

## Address Gaps in Vaccine Access

- ❑ Partners with Seattle Children's REACH Residency program to conduct informal interviews with Childhood and COVID-19 Vaccine Program Providers to assess barriers affecting rate of childhood vaccination for children 3 years old and under. Initial focus on Okanagan, Spokane, Whitman, & Yakima Counties.
- ❑ Plans to identify appropriate DOH interventions to address barriers.
- ❑ Further work with Health Care Authority to assess if there are differences in vaccination coverage among children enrolled in Medicaid and approaches to resolve gaps.

# DOH Strategies to Promote Pediatric Immunizations

## Childhood Vaccine Program Enrollment Promotion

- ❑ Partnering with OPAE to expand access in juvenile correctional settings.
- ❑ Regional Reps promote CVP in their local health jurisdictions.
- ❑ Planning with COVID team to promote CVP enrollment to providers enrolled in the COVID Vaccine program.

Questions?



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