

# Narrative Review of Pollutants and Regulations in Family-Based Childcare Settings

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## INTRODUCTION

- ❑ The early stages of child development is a vulnerable timespan where exposure to environmental hazards can substantially impact childhood health outcomes
- ❑ Chronic exposure to environmental toxins during development can have long lasting health consequences
- ❑ Research has traditionally focused on facility-based childcare and schools, however, many younger children receive child-care in a family-based setting which is a largely unresearched area
- ❑ Family based child-care is provided in the home has different environmental hazards than those in a facility or school setting. Regulations and licensing of childcare providers differ across the US for family-based childcare.
- ❑ Many child-care providers have different levels of knowledge regarding environmental hazards and safe practices in a home setting

### Aim 1

Assess the environmental pollutants in family-based child-care settings

### Aim 2

Determine the presence of environmental training and regulations for caregivers

### Aim 3

Identify any gaps in existing literature, training, and regulations of family-based childcare

## METHODS

- ❑ A narrative review was conducted using multiple databases with phrases such as “common indoor pollutants”, “childcare licensure & regulations”, and “indoor air quality control”.
- ❑ Peer-reviewed articles and journals were selected based on connection to childcare regulations and environmental health.

## RESULTS

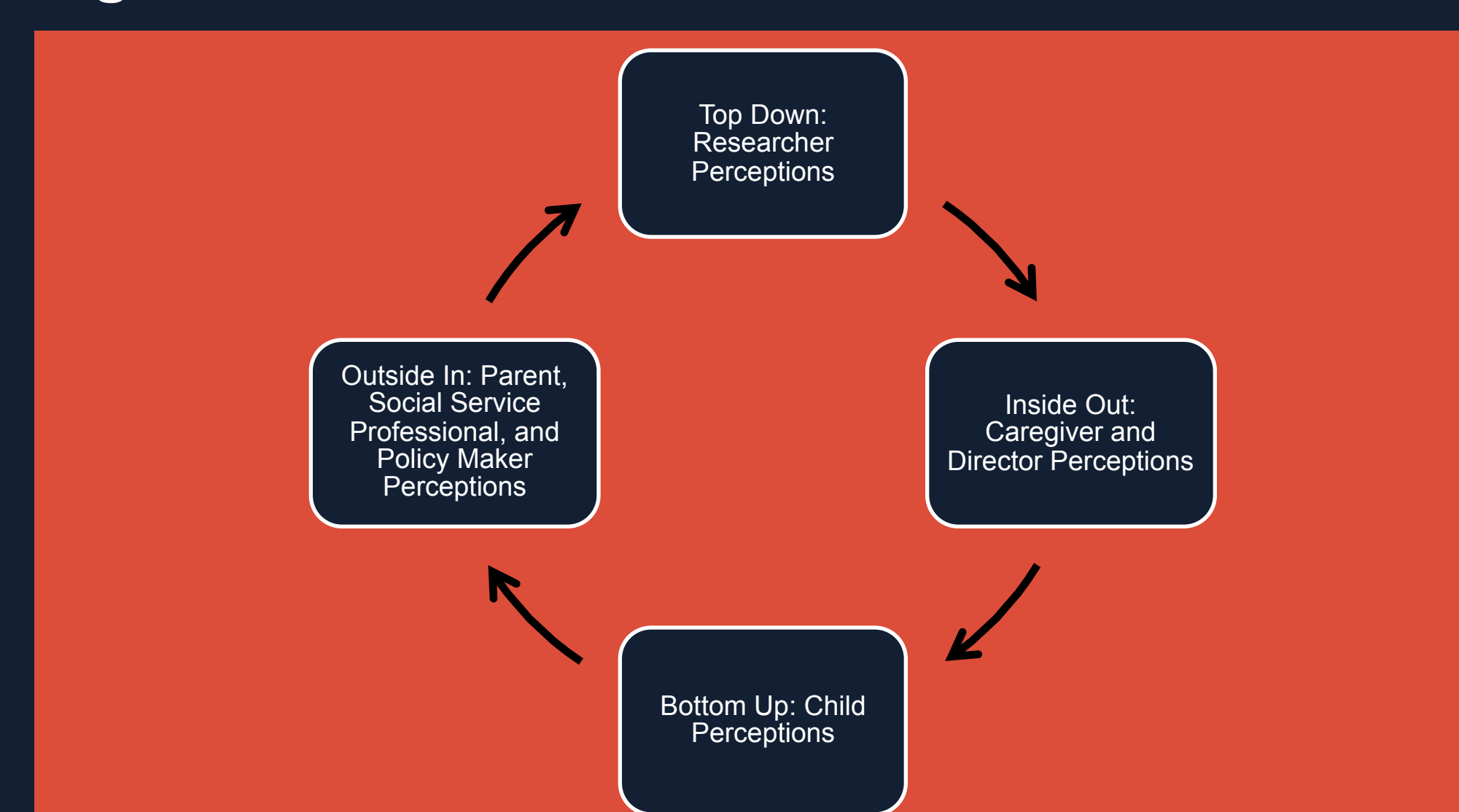
### Environmental Pollutants in the Home

- ❑ Some of the main pollutants in the home are Particulate Matter (PM), Nitrogen Dioxide (NO<sub>2</sub>), and Volatile Organic Compounds (VOCs) (Vardoulakis, et al., 2020).
- ❑ Major sources include smoking, cooking vehicle emissions, use of incense/candles, cleaning products, and activity of individuals (Vardoulakis, et al., 2020; Nishihama, et al., 2021).
- ❑ Most state licensing requires FCC caregivers to use bleach or other disinfectant. However, bleach has proven to produce known carcinogens and respiratory irritants (Querdibitty, et al., 2022).
- ❑ Many FCC homes use neurotoxic pesticides such as organophosphates or pyrethroids as a form of pest-control (Stephens, et al., 2017)

### Training Programs for Providers

- ❑ Available training programs for childcare providers lack advance courses pertaining to environmental health.
- ❑ Research conducted on a 2016 childcare training program created for childcare providers saw only one third of completed training pertains to planning a safe and healthy environment (Ackerman, 2017).
- ❑ Trainees average an estimated 10-12 hours of online training annually with 75% of offered courses being beginner’s level with only 25% dedicated for intermediate and advanced level courses (Ackerman, 2017).
- ❑ Perspectives on the importance of training for providers differ when comparing different stakeholders (Harrist, Thompson, Norris, 2007).

Figure 1



Perception of Stakeholders. Adapted from “Defining Quality Child Care: Multiple Stakeholder Perspectives”, by Amanda H., Stacy T., Deborah N (2007), *Early Education And Development*, 18:2, 305-226

### Environmental Pollutants

Lack of research on pollutants in FCC homes

There is limited knowledge of and accessibility to green cleaning products

Lack of safe pest management interventions for FCC caregivers

### Regulations and Trainings

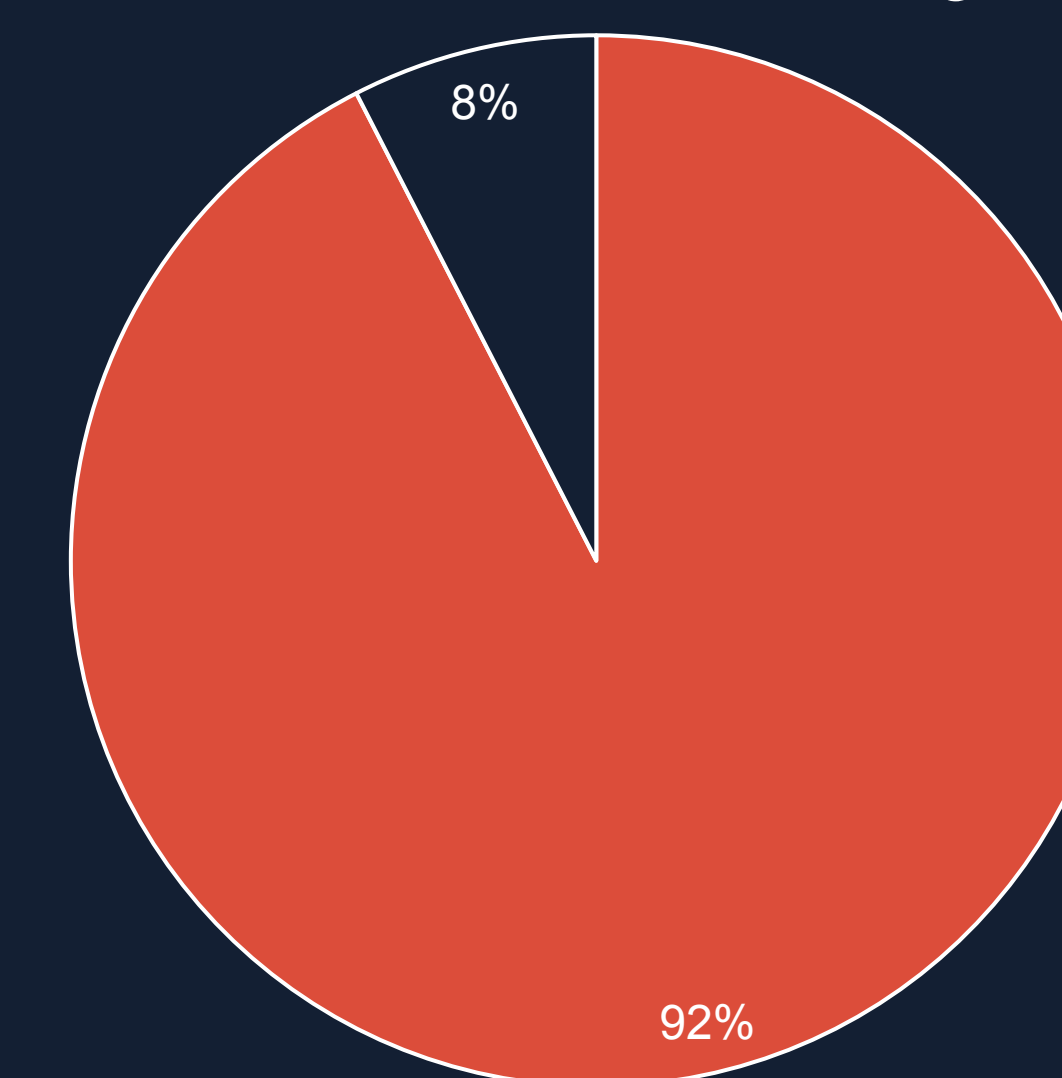
Training courses lack environmental health inclusion

Considerably less data on how effective current training programs are for providers

Lack of federal regulations for environmental health inspections

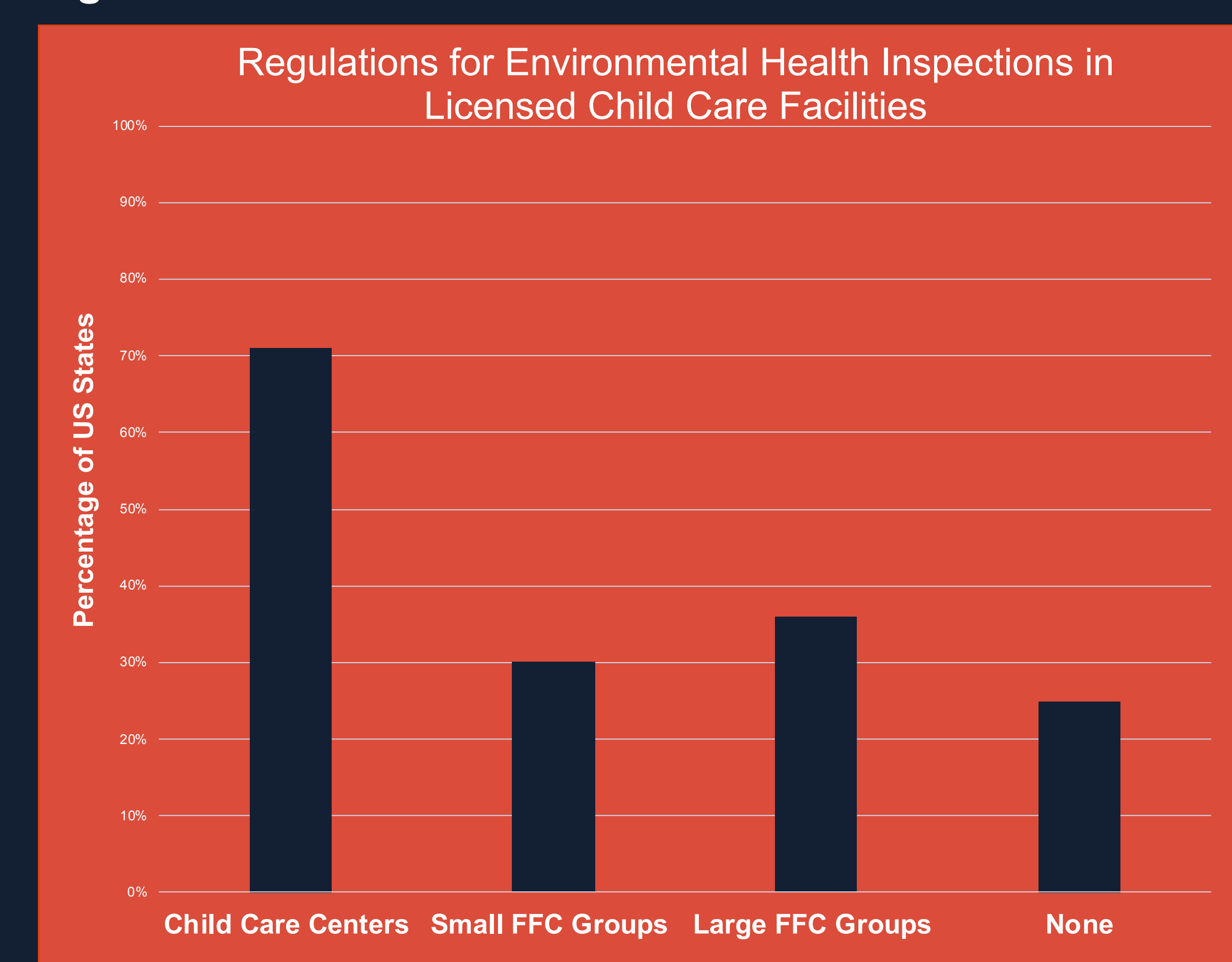
Figure 2

Environmental Health Literature in Daycare and Family-Based Childcare Settings



■ "Daycare" "Environmental Health" □ "Family Child Care" "Environmental Health"  
Percentage of literature detailing environmental health in daycare centers and FCC homes. Data sourced from PubMed

Figure 3



Percentage of US States that require Environmental Health Inspections. Data sourced from the 2017 Child Care Licensing Survey

## CONCLUSION

- ❑ There is considerable evidence on the impact of indoor environmental pollutants on children in facilities but a lack of research in a family-based child-care setting
- ❑ There is a considerable lack of successful environmental health training programs for providers
- ❑ This narrative review highlights the need for research on pollutants in a family-based child-care setting and comprehensive training program focused on environmental health for child-care providers
- ❑ This review sheds light on the need for additional requirements and regulations for environmental health training in family-based child-care

### Rec 1

• Increase research on pollutants and their impact on childhood health in family-based childcare

### Rec 2

• Place more emphasis on regulating environmental health competency of childcare providers

### Rec 3

• Training regulations and air quality control in family-based childcare settings should be inclusive in the scope of policy makers

## CONTACTS

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## ACKNOWLEDGEMENTS

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