

Investigation of State Approaches to Assessing Indoor Contaminated Dust

Matthew Abbott, VSFS Intern

Sponsor: Stuart Walker, Environmental Protection Agency

Background

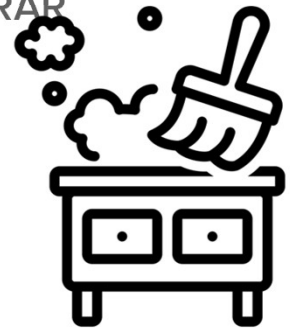
- US EPA developed Building Preliminary Remediation Goals (BPRG)

Calculator

- Estimates human health risk from radioactively contaminated dust
- Based on chem dust guidelines from WTC incident

- Building Dose Compliance Concentrations (BDCC)

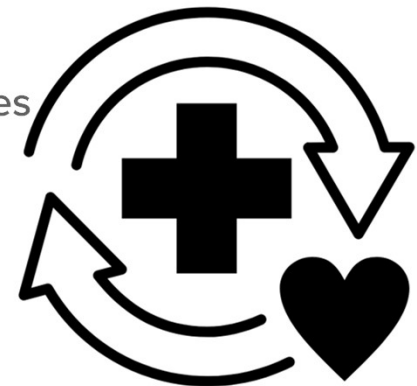
- Used for dose assessment at CERCLA site if dose based standard is an ARAR
- Parameters consistent with BPRG



Created by Creative Mahira
from Noun Project

Health Significance

- Small exposure to radiation can lead to increased cancer risk throughout lifetime
 - Radiation dose and isotopes involved influence outcomes
- Exposure to chemical dust can lead to a variety of health problems depending on the chemical
 - Lead - cardiovascular effects, neurological damage, and behaviour changes
 - Meth lab - cardiovascular effects, confusion, breathing difficulties
 - PCBs - cancer, liver and kidney damage



Created by Sofiah
from Noun Project

Objectives/Goals

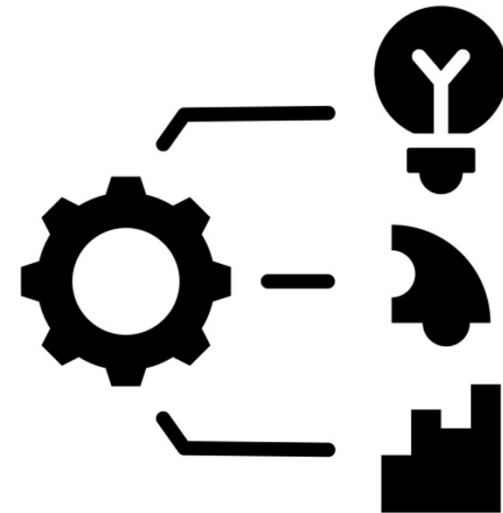
- Collect models and guidance from each state
 - Model/guidance for protecting human health
 - Chemical and Radiation
 - Sampling methods
 - Any additional information
- Info may help reassess EPA guidelines
 - Chemical and Radioactively contaminated dust



Created by kumakamu
from Noun Project

Methods

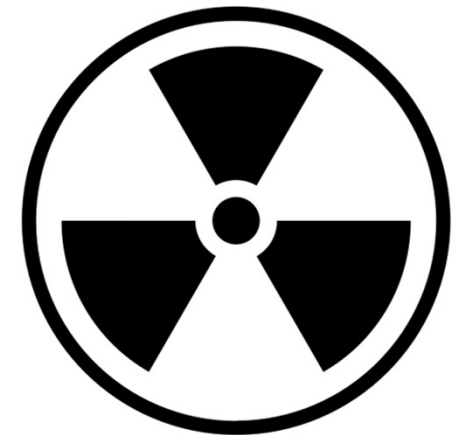
- Representatives from relevant departments from each state were contacted
 - Email, department webpage, and phone calls
- Guidance/Models for:
 - Radioactive dust
 - Meth lab clean up
 - PCBs
 - Pesticides
 - Asbestos
 - Lead
- Independent research
 - Examining webpages and available documents



Created by Ifanicon
from Noun Project

Results - Radiation

- Responses from 32/50 states
 - 5/32 responded no models of guidance in place
- No response from 18/50 states
- Most states used:
 - RESRAD-BUILD
 - MARSSIM
 - NRC Guidance (Reg Guide 1.86)



Created by pxLens
from Noun Project

No Reply - Radiation

Alabama	Kansas	Montana	Oklahoma
Arizona	Kentucky	Nevada	South Dakota
Colorado	Maine	New Mexico	Virginia
Florida	Maryland	North Carolina	Washington
Georgia	Missouri	North Dakota	Wisconsin

- Any information pertaining to models or guidance used for remediating radioactivity contaminated dust **INDOORS**

Results - Chemical

- 19/50 states responded
 - 6/19 responded no models of guidance in place
- No response from 31/50 states
- Variety of responses
 - Lead
 - Polychlorinated Biphenyls (PCBs)
 - Meth lab cleanup
 - Sampling methods



Created by mangunkarsa
from Noun Project

Results - Chemical

- California

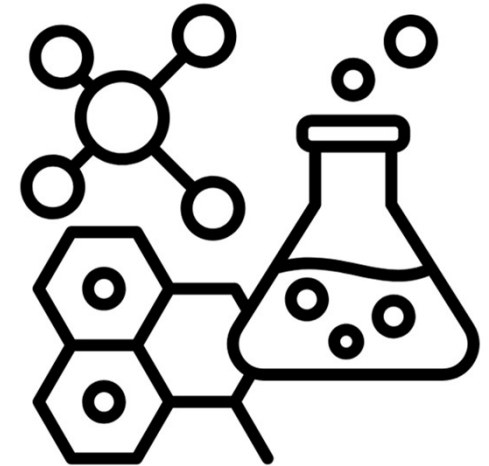
- Human and Ecological Risk Office (HERO), Human Health Risk Assessment (HHRA) for 2018 & 2020 Note Number 8 "Recommendations for Evaluating Polychlorinated Biphenyls (PCBs) at Contaminated Sites in California"
- Assessment (OEHHA) Environmental Protection Agency 2009 Guidance "Assessment of Children's Exposure to Surface Methamphetamine Residues in Former Clandestine Methamphetamine Labs, and Identification of a Risk-Based Cleanup Standard for Surface Methamphetamine Contamination"

- Georgia

- 40 CFR Part 261, Appendix I - sampling
 - EPA website for SW-846 test methods
-

Results - Chemical

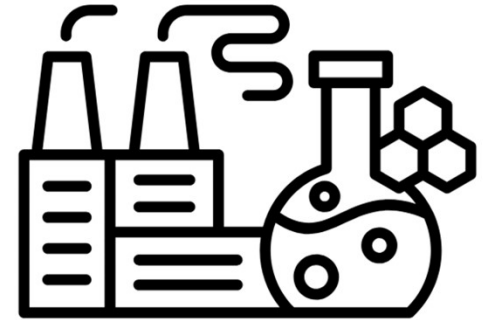
- Hawaii
 - Tennessee Meth Lab guidance - 0.1 ug/100 cm²
- Massachusetts
 - ATSDR's Public Health Assessment Guidance Manual
- Michigan
 - EPA guidance for lead
- Minnesota
 - Based on HUD guidelines for lead
- Montana
 - EPA guidance regarding asbestos.
 - Meth cleanup value is based on information from California and Colorado.



Created by Dahlia nur aini
from Noun Project

Results - Chemical

- Nebraska
 - Meth lab - Title 178 Chapter 24
 - Lead - Title 178 Chapter 23
- New York
 - Lead - Follows the U.S. Environmental Protection Agency protocols for sampling residential dust for case closure purposes
- Ohio
 - EPA Regional Screening Levels
- South Carolina
 - TSCA guidance for lead in dust



Created by Bahrul Ulum
from Noun Project

Results - Chemical

- Tennessee
 - Lead - EPA guidance
 - Meth lab - California guidance
 - Utah
 - New Mexico Risk Assessment Guidance for Site Investigations and Remediation
 - Washington
 - PCBs - Dallas Avenue, Rainer Commons, and Alder Tower documents
-

Additional Results - Chemical

- National Apartment Association list of meth lab cleanup guidelines by state
- US EPA Residential Sampling for Lead - Protocols for Dust and Soil Sampling
- World Trade Center incident benchmarks
- Department of Defense's (DOD) Center for Health Promotion and Preventative Medicine (CHPPM) 2009 Technical Guide "Health Risk Assessment Methods and Screening Levels for Evaluating Office Worker Exposures to Contaminants on Indoor Surfaces Using Surface Wipe Data."



Created by waqiahtul mukarromah
from Noun Project

No Reply - Chemical

Alabama	Colorado	Illinois	Maine	New Mexico	Pennsylvania	Wyoming
Alaska	Connecticut	Indiana	Maryland	North Carolina	Rhode Island	
Arizona	Delaware	Iowa	Mississippi	North Dakota	Texas	
Arkansas	Florida	Kentucky	Missouri	Oklahoma	West Virginia	
California	Idaho	Louisiana	New Hampshire	Oregon	Wisconsin	

- Any information pertaining to models or guidance used for remediating dust contaminated with asbestos, meth lab cleanup, PCBs, pesticides, and lead **INDOORS**

Discussion

- **Radiation - Most states used either RESRAD Build or NRC guidance**
 - Handful of states utilized their own models/guidance
 - 20 states no response
 - More information would be helpful in making the list comprehensive
 - **Chemical - Received variety guidance for different chemical contaminants**
 - Not enough information to make any conclusions
-

Send Relevant Info:

- We are still seeking information on additional guidance or models that are being used for addressing contaminated dust indoors
 - If you know of any such publicly available guidance, please provide the name, where it can found (e.g., URL), and a contact name if known
 - Matthew Abbott - mjabbott5@yahoo.com
 - Stuart Walker - walker.stuart@epa.gov
-

References

- The BPRG calculator may be found here: <https://epa-bprg.ornl.gov/>
- Risk assessment for the cleanup of chemically contaminated dust after the World Trade Center incident, which may be found here: https://epa-bprg.ornl.gov/documents/copc_benchmark.pdf
- BDCC calculator and may be found here: <https://epa-bdcc.ornl.gov/>
- NAAHQ list of meth lab cleanup guidelines by state: <https://naahq.org/sites/default/files/naa-documents/government-affairs/protected/business-management-operations/property-operations/State-by-State-Meth-Lab-Cleanup-Regulations.pdf>
- Radiation health effects: <https://www.epa.gov/radiation/radiation-health-effects#:~:text=Exposure%20to%20very%20high%20levels,as%20cancer%20and%20cardiovascular%20disease.>
- PCB health effects: <https://wwwn.cdc.gov/TSP/PHS/PHS.aspx?phsid=139&toxid=26#:~:text=Breathing%20PCBs%20over%20several%20months,the%20liver%20and%20biliary%20tract.>
- Meth lab health effects: <http://www.idph.state.il.us/envhealth/factsheets/meth-labs.htm>
- Lead health effects: <https://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health#:~:text=At%20high%20levels%20of%20exposure,intellectual%20disability%20and%20behavioural%20disorders.>