

# Common Household Contaminants: The Hazards and the Laws

*The National Center for Healthy Housing (NCHH) developed this summary to serve as a short guide for health and housing professionals on common household contaminants. It is not comprehensive. As a guide, NCHH provides only short descriptions intended as a reminder to professionals. Professionals need a solid understanding of the contaminants to make the best use of this guide. See references at [www.healthyhomestraining.org/credential](http://www.healthyhomestraining.org/credential) for more information.*

<b>Table 1 Hazards Posed by Common Household Contaminants</b>				
Contaminant (sorted by name)	Primary Health Impact	Common Sources in Home	Primary Routes of Exposure	“Keep Its” (listed by priority)
Asbestos	<ul style="list-style-type: none"> <li>• Lung cancer</li> <li>• Asbestosis (scar tissue buildup in lung)</li> <li>• Mesothelioma (cancer of the lining of chest and abdomen)</li> </ul>	<ul style="list-style-type: none"> <li>• Insulation / Vermiculite</li> <li>• Floor tiles</li> <li>• Sheet vinyl flooring</li> <li>• Cement shingles or roofing</li> <li>• Plaster and joint compound</li> <li>• Gaskets</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation of fibers from deteriorated, damaged or disturbed material. The material needs to be friable.</li> </ul>	Maintained Contaminant-Free Dry Clean
Arsenic	<ul style="list-style-type: none"> <li>• Skin cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Chromated Copper Arsenate (CCA) treated lumber (produced before 2004)</li> <li>• Private wells (in some locations)</li> </ul>	<ul style="list-style-type: none"> <li>• Ingestion of drinking water or residue from wood or soil</li> <li>• Splinters</li> </ul>	Maintained Safe
Carbon Monoxide	<ul style="list-style-type: none"> <li>• Death</li> <li>• Central nervous system damage</li> </ul>	<ul style="list-style-type: none"> <li>• Combustion appliances</li> <li>• Attached garage</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> </ul>	Ventilated Maintained Clean
Cockroaches	<ul style="list-style-type: none"> <li>• Asthma</li> <li>• Allergies</li> <li>• Stomach Illness</li> <li>• Communicable disease</li> </ul>	<ul style="list-style-type: none"> <li>• Walls, cavities and other places to hide</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> <li>• Ingestion</li> </ul>	Pest-Free Clean Dry Maintained
Formaldehyde	<ul style="list-style-type: none"> <li>• Respiratory Irritation &amp; Sensitization</li> <li>• Nasal Cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Glues</li> <li>• Pressed wood products</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> </ul>	Contaminant-Free Ventilated
Lead	<ul style="list-style-type: none"> <li>• Nervous system / brain damage</li> <li>• Learning &amp; behavioral problems</li> <li>• Cancer</li> <li>• High blood pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Deteriorated paint</li> <li>• Lead in soil and dust</li> <li>• Lead in water</li> <li>• Some consumer products</li> </ul>	<ul style="list-style-type: none"> <li>• Ingestion</li> <li>• Inhalation of dust from renovation, or disturbing lead-based paint.</li> </ul>	Maintained Clean Dry Contaminant-Free
Mercury	<ul style="list-style-type: none"> <li>• Nervous system / brain damage</li> </ul>	<ul style="list-style-type: none"> <li>• Florescent lamps</li> <li>• Thermometers</li> <li>• Switches</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> </ul>	Maintained Ventilated Clean Contaminant-Free

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Mold	<ul style="list-style-type: none"> <li>• Asthma</li> <li>• Hypersensitivity pneumonitis</li> <li>• Coughing / Wheezing</li> <li>• Upper respiratory tract symptoms</li> </ul>	<ul style="list-style-type: none"> <li>• Damp indoor environments</li> <li>• Water damaged materials</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> <li>• Ingestion</li> </ul>	Dry Maintained Clean Ventilated
Nitrogen Oxides	<ul style="list-style-type: none"> <li>• Asthma Exacerbation</li> </ul>	<ul style="list-style-type: none"> <li>• Combustion appliances</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> </ul>	Ventilated Maintained
Pesticides	<ul style="list-style-type: none"> <li>• Depends on pesticide used, often nervous system</li> </ul>	<ul style="list-style-type: none"> <li>• Current use</li> <li>• Residue from past use</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> <li>• Ingestion</li> <li>• Dermal</li> </ul>	Pest-Free Contaminant-Free Maintained Ventilated
Radon	<ul style="list-style-type: none"> <li>• Lung cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Soil, clay or rock from around and underneath foundation</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> </ul>	Ventilated Contaminant-Free Maintained Dry
Rodents	<ul style="list-style-type: none"> <li>• Asthma (mice)</li> <li>• Infectious disease</li> <li>• Bites</li> </ul>	<ul style="list-style-type: none"> <li>• Walls, cavities, crawlspaces and other places to hide</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> <li>• Ingestion</li> <li>• Bites</li> </ul>	Pest-Free Maintained Dry Clean
Sewer Gas	<ul style="list-style-type: none"> <li>• Fire &amp; explosion</li> <li>• Central nervous system damage</li> <li>• Respiratory system damage</li> </ul>	<ul style="list-style-type: none"> <li>• Broken sewers</li> <li>• Empty drain traps</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> </ul>	Maintained Ventilated
Volatile Organics (VOCs)	<ul style="list-style-type: none"> <li>• Depends on chemical, often nervous system damage</li> <li>• Can be poisoning hazard</li> </ul>	<ul style="list-style-type: none"> <li>• Air fresheners</li> <li>• Glues &amp; building materials</li> <li>• Sprays &amp; coatings</li> <li>• Household cleaners</li> </ul>	<ul style="list-style-type: none"> <li>• Inhalation</li> <li>• Ingestion</li> </ul>	Contaminant-Free Safe Ventilated

**Notes:**

- Only some common household contaminants with significant potential hazards are listed.
- Contaminants are sorted alphabetically.
- Primary health impact is based on hazard posed by contaminant in common household settings.
- “Keep Its” refers to the Seven Principles of Healthy Housing.
- “Keep Its” are listed by their importance to addressing hazard.
- “Friable” means that the material, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, and includes previously nonfriable material after such previously nonfriable material becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure. 40 CFR 763.83.
- *Deteriorated paint* means paint that is cracking, flaking, chipping, peeling, or otherwise separating from the substrate of a building component. 40 CFR 745.223.

## Common Household Contaminants: The Hazards and the Laws

<b>Table 2 Federal/State Requirements for Homes Regarding Common Household Contaminants</b>					
Contaminant	Sale or Use	In-Home Hazard Level	Disclosure to Resident	Renovation Work Practices	State Requirements
Asbestos	EPA banned sale in textured paint, patching / joint compounds, and thermal systems insulation in 1977. <i>Note: EPA banned sale in most products reversed by court in 1991.</i>	EPA - Friable asbestos containing material confirmed by lab to be asbestos.	<i>None</i>	<ul style="list-style-type: none"> <li>• EPA requires work practices if renovation of housing with more than four units per building.</li> <li>• EPA requires work practices if any demolition.</li> <li>• OSHA requires work practices.</li> </ul>	<ul style="list-style-type: none"> <li>• Most states adopt EPA work practices &amp; professional licensing standards.</li> <li>• Some states require disclosure.</li> </ul>
Arsenic	EPA banned CCA lumber production in 2004.	<i>None.</i>	<i>None</i>	<i>None</i>	Some states set standards in soil
Carbon Monoxide	<i>Not applicable</i>	CPSC – Alarm sounds at life-threatening conditions. <i>Note: Alarm not required.</i>	<i>None</i>	<i>None</i>	Some states require alarms. IRC requires alarm when getting permit.
Cockroaches	<i>Not applicable</i>	HUD HQS - Free of infestation	<i>None</i>	<i>None</i>	IPMC and some states prohibit infestation and set cleanup stds.
Formaldehyde	HUD sets stds on wood products in manufactured housing.	<i>None</i>	HUD requires warning in manufactured housing.	OSHA has exposure limits and requires controls and work practices.	California sets stds on wood products in use except mfg hsg.
Lead	<p>CPSC</p> <ul style="list-style-type: none"> <li>• Banned sale or application in new paint after 1977.</li> <li>• Strictly limited lead in children's products after 2/10/2009</li> </ul>	<p>EPA</p> <ul style="list-style-type: none"> <li>• Deteriorated lead-based paint.</li> <li>• High levels of lead in dust or soil. See Table 3</li> <li>• No imminent &amp; substantial endangerment.</li> </ul> <p><i>Note: HUD requires testing in federally-assisted housing. CPSC requires testing after 2/10/10.</i></p>	<p>EPA/HUD required for:</p> <ul style="list-style-type: none"> <li>• Housing sale or lease.</li> <li>• Contractors must give pre-renovation notice.</li> </ul>	<ul style="list-style-type: none"> <li>• EPA requires: <ul style="list-style-type: none"> <li>○ Pre-renovation notification</li> <li>○ Work practices (effective 4/22/10)</li> </ul> </li> <li>• HUD requires work practices on subsidized property</li> <li>• OSHA requires work practices.</li> </ul>	<ul style="list-style-type: none"> <li>• IPMC &amp; some states prohibit deteriorated paint.</li> <li>• Most state adopt EPA work practices and professional licensing standards.</li> <li>• Some states require more.</li> </ul>

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Contaminant	Sale or Use	In-Home Hazard Level	Disclosure to Resident	Renovation Work Practices	State Requirements
Mercury	CPSC banned sale in interior latex paint.	<i>None</i>	<i>None</i>	<i>None</i>	Some states ban mercury in some products.
Mold	<i>Not applicable</i>	<i>None</i>	<i>None</i>	<i>None</i>	Some states require cleanup and licensing.
Nitrogen Oxides	<i>Not applicable</i>	<i>None</i>	<i>None</i>	<i>None</i>	<i>None</i>
Pesticides	EPA bans sale or use of unregistered pesticides.	EPA - Depends on pesticide.	<i>None</i>	All required by EPA to follow label. Most states license contractors using pesticides.	Many states require licensing of professionals. Some states restrict use.
Radon	<i>Not applicable</i>	Recommended action level of 4 picocuries per liter of air	<i>None</i>	<i>None</i>	Some states require testing, licensing and remediation.
Rodents	<i>Not applicable</i>	HUD HQS - Free of infestation	<i>None</i>	<i>None</i>	IPMC and some states prohibit infestation and set cleanup stds.
Sewer Gas	<i>Not applicable</i>	<i>None</i>	<i>None</i>	<i>None</i>	IPMC and some states require drain traps to be have water.
Volatile Organic (VOCs)	<i>None</i>	HUD HQS - Free of pollutants in air at levels that threaten health	<i>None</i>	<i>None</i>	<i>Unknown</i>

Notes:

- CPSC = U.S. Consumer Product Safety Commission
- EPA = U.S. Environmental Protection Agency
- HQS = HUD's Housing Quality Standards for property covered by Housing Choice Vouchers (Section 8 Vouchers)
- HUD = U.S. Department of Housing and Urban Development
- IPMC = International Property Maintenance Code
- IRC = International Residential Code.
- OSHA = U.S. Occupational Safety and Health Administration

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<b>Table 3</b>			
<b>Key Federal Work Practice Requirement for Asbestos and Lead-Based Paint</b>			
<b>Lead-Based Paint Renovation Work Practices</b>			
Agency Rule	Professional Licensing	Trigger for Requirements	Clearance Testing
EPA Lead-Based Paint Activities – 40 CFR 745 Subpart L - 8/29/1996	<ul style="list-style-type: none"> <li>• <b>Dust Sampling Technician</b> – Conducts clearance.</li> <li>• <b>Inspector</b> – Determines if paint is lead-based paint. Conducts clearance.</li> <li>• <b>Risk Assessor</b> – Determines if paint is lead-based paint. Conducts clearance. Evaluates hazards and recommends corrections.</li> <li>• <b>Abatement Contractor, Supervisor, and Worker</b> – Conduct abatement.</li> </ul>	<b>Abatement</b> – permanent elimination of lead-based paint hazards but not renovation. Pre-renovation notice to EPA (or authorized state).	Independent risk assessor or inspector must confirm levels less than: <ul style="list-style-type: none"> <li>• 40 µg/ft<sup>2</sup> on floors;</li> <li>• 250 µg/ft<sup>2</sup> on window sills;</li> <li>• 400 µg/ft<sup>2</sup> in window trough (if present in contained work area);</li> </ul>
HUD Lead-Safe Housing – 24 CFR Part 35 - 9/6/1996	None unless abatement required but HUD requires training for: <ul style="list-style-type: none"> <li>• Supervisor and worker completes HUD-approved lead-safe work practices course; or</li> <li>• Supervisor completes Abatement Supervisor course and trains workers.</li> </ul>	Federal subsidized housing disturbing more than: <ul style="list-style-type: none"> <li>• 2 ft<sup>2</sup> per interior room;</li> <li>• 20 ft<sup>2</sup> in exterior; or</li> <li>• 10% of component; of paint in pre-1978 housing.</li> </ul>	Independent risk assessor, inspector, or dust sampling technician must confirm levels less than: <ul style="list-style-type: none"> <li>• 40 µg/ft<sup>2</sup> on floors;</li> <li>• 250 µg/ft<sup>2</sup> on window sills; and</li> <li>• 400 µg/ft<sup>2</sup> in window trough (if present in contained work area).</li> </ul>
EPA Renovation, Repair & Painting – 40 CFR 745.80 to 745.91 - 4/22/2010	<ul style="list-style-type: none"> <li>• <b>Certified Renovation Firm with Certified Renovator</b></li> </ul>	<b>Renovation</b> – Disturbing more than: <ul style="list-style-type: none"> <li>• 6 ft<sup>2</sup> per interior room,</li> <li>• 20 ft<sup>2</sup> in exterior; or</li> <li>• Window replacement or paint demolition.</li> </ul> of paint in pre-1978 housing occurring over a 30 day period.	<ul style="list-style-type: none"> <li>• Certified renovation conducting post-cleaning verification by comparing wipes to card.</li> <li>• Option for independent clearance testing per HUD, state, or local rule.</li> </ul>

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<b>Table 3</b> <b>Key Federal Work Practice Requirement for Asbestos and Lead-Based Paint</b>			
<b>Asbestos Renovation Work Practices</b>			
EPA NESHAP – 40 CFR 61.145 - 1990	<ul style="list-style-type: none"> <li>• <b>Inspector</b> – Determines if material contains asbestos.</li> <li>• <b>Management Planner</b> – Determines if material contains asbestos. Evaluates hazards and recommends corrections.</li> <li>• <b>Project Designer</b> – Designs renovation to comply with requirements.</li> <li>• <b>Abatement Contractor, Supervisor, and Worker</b> – Conduct abatement.</li> </ul>	Disturbing more than: <ul style="list-style-type: none"> <li>• 260 ft on pipes;</li> <li>• 160 ft<sup>2</sup> on other components; or</li> <li>• 35 ft<sup>3</sup> removed.</li> </ul> of friable asbestos-containing material in calendar year. Pre-renovation notice to EPA (or authorized state).	Zero visible emissions to the outside air from transport or disposal of asbestos waste.

*Notes:*

- *CFR = Code of Federal Regulations*
- *EPA = U.S. Environmental Protection Agency*
- *ft<sup>2</sup> = Square feet*
- *HUD = U.S. Department of Housing and Urban Development*
- *LBP = Lead-Based Paint*
- *NESHAP = National Emission Standard for Hazardous Air Pollutants*
- *µg/ft<sup>2</sup> = micrograms of lead per square foot of horizontal surface.*