

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. Go to the link below for more information.

http://healthyhousingsolutions.com/wp-content/uploads/2015/06/Essentials_Refs_Connections_BW_Jan20141.pdf

Table 1 Hazards Posed by Common Household Contaminants				
Contaminant (sorted by name)	Primary Health Impact	Common Sources in Home	Primary Routes of Exposure	“Keep Its” (listed by priority)
Asbestos	<input type="checkbox"/> Lung cancer <input type="checkbox"/> Asbestosis (scar tissue buildup in lung) <input type="checkbox"/> Mesothelioma (cancer of the lining of chest and abdomen)	<input type="checkbox"/> Insulation / Vermiculite <input type="checkbox"/> Floor tiles <input type="checkbox"/> Sheet vinyl flooring <input type="checkbox"/> Cement shingles or roofing <input type="checkbox"/> Plaster and joint compound <input type="checkbox"/> Gaskets	<input type="checkbox"/> Inhalation of fibers from deteriorated, damaged or disturbed material	Maintained Contaminant-Free Dry Clean
Arsenic	<input type="checkbox"/> Skin cancer	<input type="checkbox"/> Copper Chrome Arsenate (CCA) Treated lumber (produced before 2004) <input type="checkbox"/> Private wells (in some locations)	<input type="checkbox"/> Ingestion of residue from wood or soil <input type="checkbox"/> Splinters <input type="checkbox"/> Drinking water	Maintained Safe
Carbon Monoxide	<input type="checkbox"/> Death <input type="checkbox"/> Central nervous system damage	<input type="checkbox"/> Combustion appliances <input type="checkbox"/> Attached garage	<input type="checkbox"/> Inhalation	Ventilated Maintained Clean
Cockroaches	<input type="checkbox"/> Asthma <input type="checkbox"/> Allergies <input type="checkbox"/> Stomach Illness <input type="checkbox"/> Communicable disease	<input type="checkbox"/> Walls, cavities and other places to hide	<input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion	Pest-Free Clean Dry Maintained
Formaldehyde	<input type="checkbox"/> Respiratory Irritation & Sensitization <input type="checkbox"/> Nasal Cancer	<input type="checkbox"/> Glues <input type="checkbox"/> Press wood products	<input type="checkbox"/> Inhalation	Contaminant-Free Ventilated
Lead	<input type="checkbox"/> Nervous system / brain damage <input type="checkbox"/> Learning, behavioral Problems <input type="checkbox"/> Cancer	<input type="checkbox"/> Deteriorated paint <input type="checkbox"/> Lead in soil and dust <input type="checkbox"/> Lead in water <input type="checkbox"/> Some consumer products	<input type="checkbox"/> Ingestion <input type="checkbox"/> Inhalation of dust from renovation, or disturbing lead-based paint.	Maintained Clean Dry Contaminant-Free
	Mercury	<input type="checkbox"/> Florescent lamps <input type="checkbox"/> Thermometers <input type="checkbox"/> Switches	<input type="checkbox"/> Inhalation	Maintained Ventilated Clean Contaminant-Free

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Contaminant (sorted by name)	Primary Health Impact	Common Sources in Home	Primary Routes of Exposure	“Keep Its” (listed by priority)
Mold	<input type="checkbox"/> Asthma <input type="checkbox"/> Hypersensitivity pneumonitis <input type="checkbox"/> Coughing / Wheezing <input type="checkbox"/> Upper respiratory tract symptoms	<input type="checkbox"/> Damp indoor environments <input type="checkbox"/> Water damaged materials	<input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion	Dry Maintained Clean Ventilated
Nitrogen Oxides	<input type="checkbox"/> Asthma Exacerbation	<input type="checkbox"/> Combustion appliances	<input type="checkbox"/> Inhalation	Ventilated Maintained
Pesticides	<input type="checkbox"/> Depends on pesticide used, often nervous system	<input type="checkbox"/> Current use <input type="checkbox"/> Residue from past use	<input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion <input type="checkbox"/> Dermal	Pest-Free Contaminant-Free Maintained Ventilated
Radon	<input type="checkbox"/> Lung cancer	<input type="checkbox"/> Soil, clay or rock from around and underneath foundation	<input type="checkbox"/> Inhalation	Ventilated Contaminant-Free Maintained Dry
Rodents	<input type="checkbox"/> Asthma (mice) <input type="checkbox"/> Infectious disease <input type="checkbox"/> Bites	<input type="checkbox"/> Walls, cavities, crawlspaces and other places to hide	<input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion <input type="checkbox"/> Bites	Pest-Free Maintained Dry Clean
Sewer Gas	<input type="checkbox"/> Fire & explosion <input type="checkbox"/> Central nervous system damage <input type="checkbox"/> Respiratory system damage	<input type="checkbox"/> Broken sewers <input type="checkbox"/> Empty drain traps	<input type="checkbox"/> Inhalation	Maintained Ventilated
Volatile Organics (VOCs)	<input type="checkbox"/> Depends on chemical, often nervous system damage <input type="checkbox"/> Can be poisoning hazard	<input type="checkbox"/> Air fresheners <input type="checkbox"/> Glues & building materials <input type="checkbox"/> Sprays & coatings <input type="checkbox"/> Household cleaners	<input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion	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.

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Table 2 Federal/State Requirements for Homes Regarding Common Household Contaminants					
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>Note: Testing not required.</i>	<i>None</i>	<input type="checkbox"/> EPA requires work practices if renovation of housing with more than four units per building. <input type="checkbox"/> EPA requires work practices if any demolition. <input type="checkbox"/> OSHA requires work practices.	<input type="checkbox"/> Most states adopt EPA work practices & professional licensing standards. <input type="checkbox"/> Some states require disclosure.
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	CPSC <input type="checkbox"/> Banned sale or application in new paint after 1977. <input type="checkbox"/> Strictly limited lead in children's products after 2/10/2009	EPA <input type="checkbox"/> Deteriorated lead-based paint. <input type="checkbox"/> High levels of lead in dust or soil. See Table 3 <input type="checkbox"/> No imminent & substantial endangerment. <i>Note: HUD requires testing in federally-assisted housing. CPSC requires testing after 2/10/10.</i>	EPA/HUD required for: <input type="checkbox"/> Housing sale or lease. <input type="checkbox"/> Contractors must give pre-renovation notice.	<input type="checkbox"/> EPA requires: <ul style="list-style-type: none"> o Pre-renovation notification o Work practices (effective 4/22/10) <input type="checkbox"/> HUD requires work practices on subsidized property <input type="checkbox"/> OSHA requires work practices.	<input type="checkbox"/> PMC & some states prohibit deteriorated paint. <input type="checkbox"/> Most state adopt EPA work practices and professional licensing standards. <input type="checkbox"/> Some states require more.

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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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Table 3			
Key Federal Work Practice Requirement for Asbestos and Lead-Based Paint			
Lead-Based Paint Renovation Work Practices			
Agency Rule	Professional Licensing	Trigger for Requirements	Clearance Testing
EPA LPB Activities – 40 CFR 745 Subpart L - 8/29/1996	<input type="checkbox"/> Dust Sampling Technician – Conducts clearance. <input type="checkbox"/> Inspector – Determines if paint is lead-based paint. Conducts clearance. <input type="checkbox"/> Risk Assessor – Determines if paint is lead-based paint. Conducts clearance. Evaluates hazards and recommends corrections. <input type="checkbox"/> Abatement Contractor, Supervisor, and Worker – Conduct abatement.	Abatement – 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: <input type="checkbox"/> 40 µg/ft ² on floors; <input type="checkbox"/> 250 µg/ft ² on window sills; <input type="checkbox"/> 400 µg/ft ² in window trough (cleanup if window disturbed); <input type="checkbox"/> 400 ppm in soil in play area; and <input type="checkbox"/> 1200 ppm in soil in other areas
HUD Lead-Safe Housing – 24 CFR Part 35 - 9/6/1996	None unless abatement required but HUD requires training for: <input type="checkbox"/> Supervisor and worker completes HUD-approved lead-safe work practices course; or <input type="checkbox"/> Supervisor completes Abatement Supervisor course and trains workers.	Federal subsidized property disturbing more than: <input type="checkbox"/> 2 ft ² per interior room; <input type="checkbox"/> 20 ft ² in exterior; or <input type="checkbox"/> 10% of component; of paint in pre-1978 housing.	Independent risk assessor, inspector, or dust sampling technician must confirm levels less than: <input type="checkbox"/> 40 µg/ft ² on floors; <input type="checkbox"/> 250 µg/ft ² on window sills; and <input type="checkbox"/> 400 µg/ft ² in window trough (cleanup if window disturbed)
EPA Renovation, Repair & Painting – 40 CFR 745.80 to 745.91 - 4/22/2010	<input type="checkbox"/> Certified Renovation Firm with Certified Renovator	Renovation – Disturbing more than: <input type="checkbox"/> 6 ft ² per interior room, <input type="checkbox"/> 20 ft ² in exterior; or <input type="checkbox"/> Window replacement or paint demolition. of paint in pre-1978 housing over 30 days.	<input type="checkbox"/> Certified renovation conducting post-cleaning verification by comparing wipes to card. <input type="checkbox"/> Option for independent clearance testing per HUD rule.

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Table 3			
Key Federal Work Practice Requirement for Asbestos and Lead-Based Paint			
Asbestos Renovation Work Practices			
EPA NESHAP – 40 CFR 61.145 - 1990	<input type="checkbox"/> Inspector – Determines if material contains asbestos. <input type="checkbox"/> Management Planner – Determines if material contains asbestos. Evaluates hazards and recommends corrections. <input type="checkbox"/> Project Designed – Designs renovation to comply with requirements. <input type="checkbox"/> Abatement Contractor, Supervisor, and Worker – Conduct abatement.	Disturbing more than: <input type="checkbox"/> 260 ft on pipes; <input type="checkbox"/> 160 ft ² on other components; or <input type="checkbox"/> 35 ft ³ removed 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*
- ft² = Square feet*
- HUD = U.S. Department of Housing and Urban Development*
- LBP = Lead-Based Paint*
- NESHAP = National Emission Standard for Hazardous Air Pollutants*
- µg/ft² = micrograms of lead per square foot of horizontal surface.*