

# Environmental Health in Settlements and Housing

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# Definition of Housing: Republic of Indonesia Law No. 1/2011

**Housing** is a collection of houses as part of settlements, both urban and rural, which is equipped with infrastructure, facilities and public utilities as a result of efforts to fulfill decent homes.

**Settlement** is part of a residential environment consisting of more than one housing unit that has infrastructure, facilities, public utilities, and has other supporting activities in urban or rural areas.

# A Healthy Home

- A home that is designed, built, and maintained to support our health
- Reason to have a healthy home: Most people spend at least half of every day inside their homes



Picture Credit:  
<https://www.emjayhomes.com.au/full-turnkey-homes-built-the-complete-package/>

# Unhealthy Home

This cause	Can become this illness or condition
<ul style="list-style-type: none"><li>- Peeling paint</li><li>- Sloppy repair/paint work</li></ul>	Lead poisoning
Smoking	Asthma, respiratory problems, sudden infant death syndrome (SIDS), lung cancer
Pesticide use	Acute poisonings and possible chronic conditions such as cancer, low birth weight and prematurity

# Causes of Bad House (Physical)

**Temperature**

**Lighting**

**Humidity**

**Ventilation**

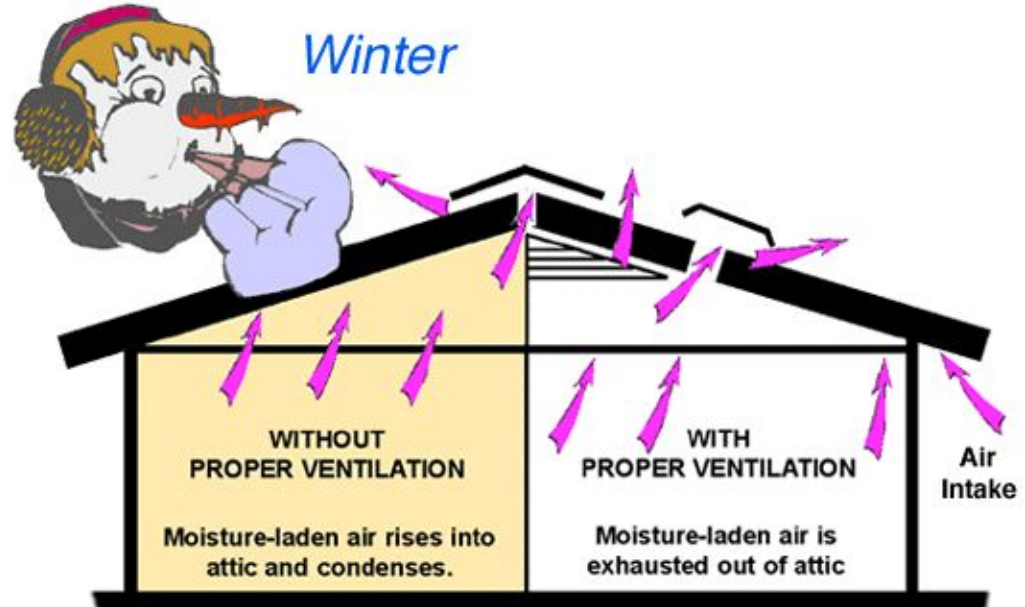
**Particulate Matter**

# Causes of Bad housing (Physical)

## Temperature

Potential health effects:

- Hypothermia
- Dehydration
- Heat stroke



Picture Credit:  
<https://nwconst.wordpress.com/2014/11/18/poor-attic-ventilation-and-winter-in-michigan-are-a-bad-combination/>

# Causes of Bad housing (Physical)



Picture Credit:  
<https://reality.economictimes.indiatimes.com/news/lighting/smart-lighting/top-5-benefits-of-organic-led-lighting/70508059>

## Lighting

Potential health effects:

- Damage to the retina in the eye
- Increase in temperature in the room



# Causes of Bad housing (Physical)

## Humidity

Humidity that is too high or too low can cause fertile growth of microorganisms



Picture Credit:  
<https://roofing-palmbeach.com/how-to-fix-a-leaky-roof-in-a-few-simple-steps/>



# Causes of Bad House (Chemical)

**Sulfur Dioxide**

**Nitrogen Dioxide**

**Carbon Monoxide**

**Carbon Dioxide**

# Causes of Bad House (Chemical)

## Sulfur Dioxide

### Risk Factors:

- Use of fuels such as charcoal, wood, and petroleum coal
- Smoking inside the house



Picture Credit:  
<https://www.newscientist.com/article/2243944-smoking-probably-puts-you-at-greater-risk-of-corona-virus-not-less/>

# Causes of Bad housing (Chemical)



Picture Credit:  
<https://id.wikipedia.org/wiki/Tungku>

## Nitrogen Dioxide

### Risk Factors:

- Use of fuels such as charcoal, wood, and petroleum coal
- Smoking inside the house

# Causes of Bad House (Biological)

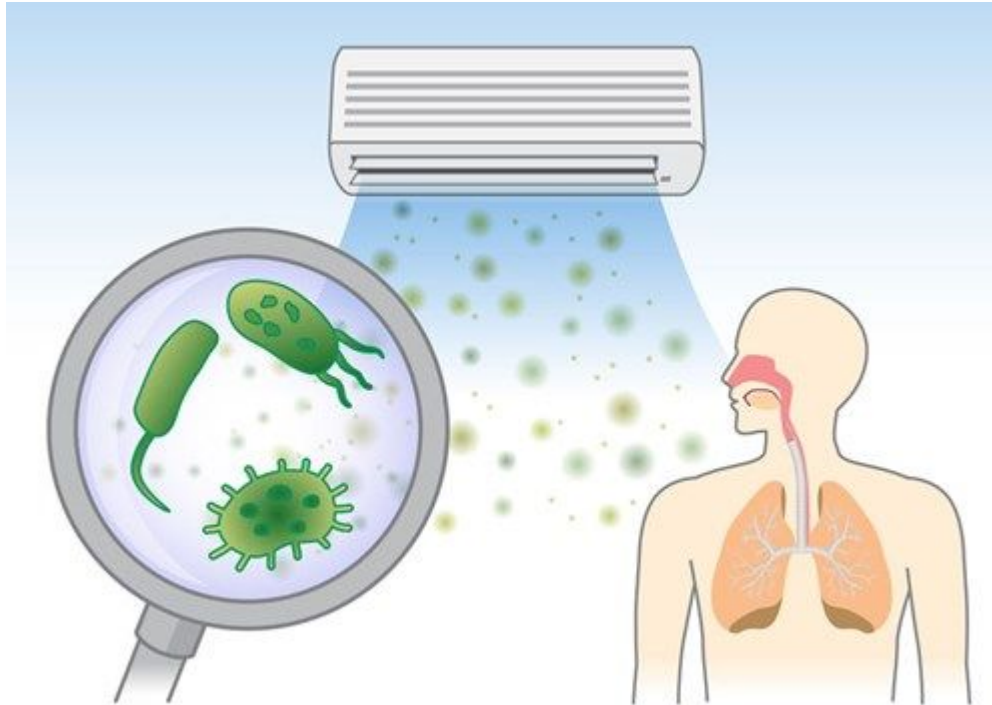


Photo Credit:  
<https://www.hawaiipacifichealth.org/healthier-hawaii/news/legionnaires-disease-what-you-need-to-know/>

# Parameters of household air quality

No	Jenis Parameter	Satuan	Kadar yang dipersyaratkan
1.	Suhu	°C	18 - 30
2.	Pencahayaan	Lux	Minimal 60
3.	Kelembaban	% Rh	40 - 60
4.	Laju Ventilasi	m/dtk	0,15 - 0,25
5.	PM <sub>2,5</sub>	µg/m <sup>3</sup>	35 dalam 24 jam
6.	PM <sub>10</sub>	µg/m <sup>3</sup>	≤ 70 dalam 24 jam

No	Jenis Parameter	Satuan	Kadar maksimal yang dipersyaratkan	Keterangan
1.	Sulfur dioksida (SO <sub>2</sub> )	ppm	0,1	24 jam
2.	Nitrogen dioksida (NO <sub>2</sub> )	ppm	0,04	24 jam
3.	Carbon monoksida (CO)	ppm	9,00	8 jam
4.	Carbondioksida (CO <sub>2</sub> )	ppm	1000	8 jam
5.	Timbal (Pb)	µg/m <sup>3</sup>	1,5	15 menit

No	Jenis Parameter	Satuan	Kadar maksimal
1.	Jamur	CFU/m <sup>3</sup>	0 CFU/m <sup>3</sup>
2.	Bakteri patogen	CFU/m <sup>3</sup>	0 CFU/m <sup>3</sup>
3.	Angka kuman	CFU/m <sup>3</sup>	< 700 CFU/m <sup>3</sup>