



Health
Canada

Santé
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Canada

Indoor Air Quality Exposure Limits at Health Canada

Development and Use

Indoor Air Contaminants Assessment Section

Water and Air Quality Bureau

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YOUR HEALTH AND SAFETY... OUR PRIORITY.

Outline

- Indoor Air Program at Health Canada
- Prioritization of Indoor Air Contaminants
- Residential Indoor Air Quality Guidelines (RIAQG)
- Indoor Air Reference Levels (IARLs)
- Uses of risk assessment products
- Standards Development

Health Canada's Indoor Air Program

MANDATE

“To promote and protect the health of Canadians by evaluating, researching, and communicating the health effects of indoor air contaminants, and to contribute to developing solutions for improving indoor air quality.”

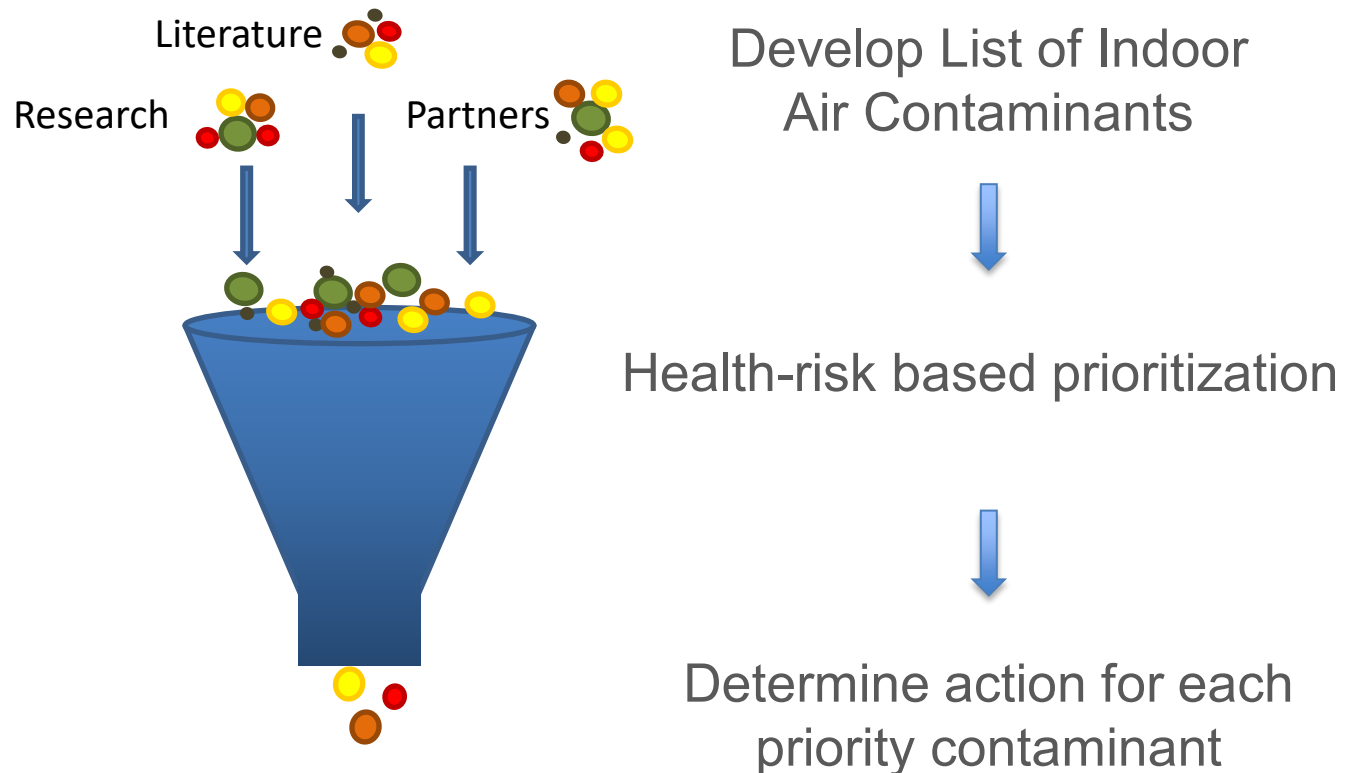
Health Canada's Indoor Air Program:

- conducts **risk assessments** to better understand adverse health impacts of exposure to air pollution;
- leads **health research** to understand exposure and health impacts in the Canadian context;
- conducts **outreach and engagement** on indoor and outdoor air quality to communicate **guidance and strategies** to reduce exposure.



IACAS Risk Assessment Prioritization

Purpose: to identify, screen and rank indoor air contaminants for full assessment



- Recently published inhalation health effects data
- Canadian exposure data (e.g. Health Canada residential studies)

- Consider data gaps, government priorities, stakeholder needs
- Possible outcomes include RIAQG, IARL, need for data, re-evaluation

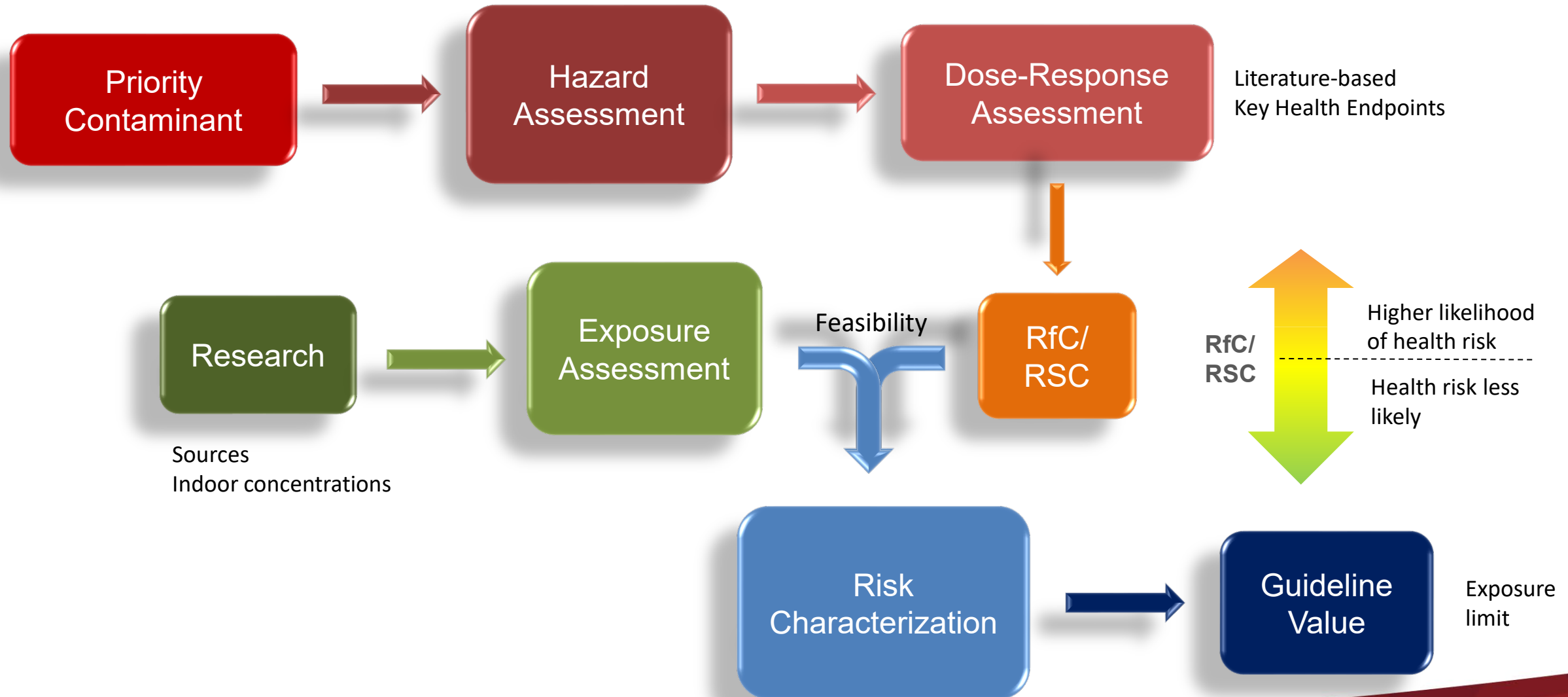
Residential Indoor Air Quality Guidelines

Residential Indoor Air Quality Guidelines (RIAQGs) are voluntary objectives under the *Canadian Environmental Protection Act (CEPA 1999)*

- Contain calculated **health-based exposure limits**, using currently available scientific data
- Take into account **highly exposed and susceptible populations**
- Used to **characterize risk** and **provide scientific basis** for risk mitigation recommendations to reduce exposure and/or protect health



Risk Assessment (RIAQG)



Guidelines and Guidance for Indoor Air Contaminants

Guidelines

Acetaldehyde (2017)
Acrolein (2021)
Carbon Dioxide (2021)
Carbon Monoxide (2006)
Formaldehyde (2006)
Naphthalene (2013)
Nitrogen Dioxide (2015)
Ozone (2010)
Radon
Toluene (2011)
Xylenes (2022)

Guidance

Benzene (2013)
Fine Particulate Matter (PM_{2.5}) (2012)
Mould (2007)

Indoor Air Reference Levels (IARLs)

- Supplement to RIAQGs
- **Evaluation of inhalation Toxicological Reference Values (TRVs)** and hazard assessments from other jurisdictions
- Include **cancer and non-cancer endpoints**
- Regularly updated
- Advantages
 - Rapid screening
 - May be used for establishing product emission standards
- Limitations
 - Not Health Canada risk assessments
 - Only chronic endpoints



SUMMARY DOCUMENT **Indoor Air Reference Levels** **for Chronic Exposure to** **Volatile Organic Compounds**



IARLs

Chloroform

Cyclohexane

Dichloromethane

Epichlorohydrin

Ethylbenzene

Ethylene oxide

Isopropyl alcohol

Isopropylbenzene

1,3-Butadiene

1,4-Dichlorobenzene

2-Butoxyethanol

2-Ethoxyethanol

3-Chloropropene

Acetone

Aniline

Carbon tetrachloride

Methyl ethyl ketone

Methyl isobutyl ketone

Propionaldehyde

Propylene oxide

Styrene

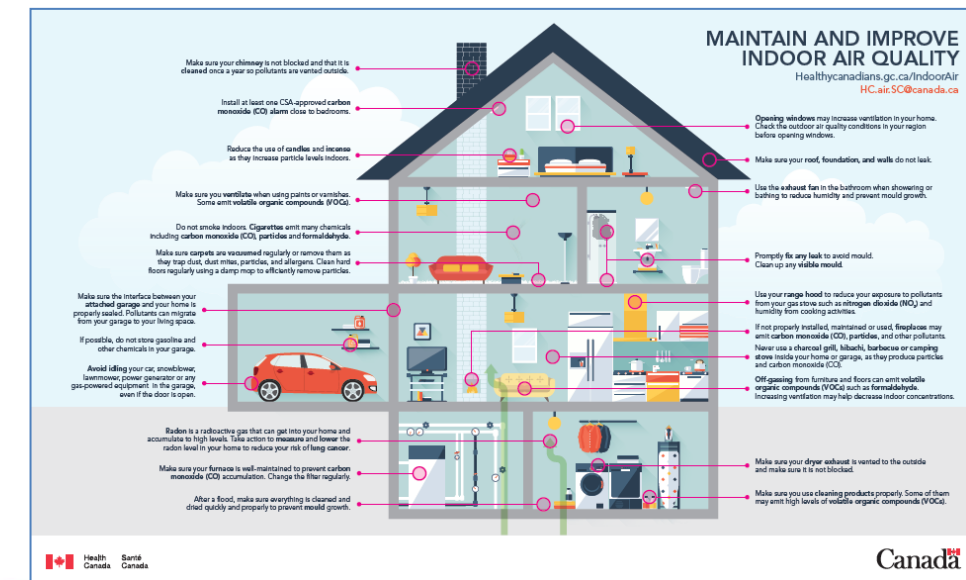
Tetrachloroethylene

Toluene diisocyanate

**Updated as RIAQGs: Acrolein, Acetaldehyde, Xylenes*

Uses for our Risk Assessment Products

- Communication and outreach products
 - Risk mitigation strategies to reduce exposure for people who live in Canada
- Guidance for public spaces and air health issues
 - Monitoring and response framework
 - Triggers for action (e.g., ventilation schedules in ice arenas)
- RIAQGs/IARLs as benchmarks for RAs within the federal, provincial and territorial governments
- Inform research priorities
 - Identify susceptible and highly exposed people
 - Testing of risk mitigation strategies
- Building codes and product standards



Standards Development: Formaldehyde



CAN/CSA-0160-16
National Standard of Canada

**Formaldehyde emissions standard for
composite wood products**

- Consistent with CARB (ATCM) 93120
- Testing in accordance with ASTM E1333 or ASTM D6007
- Health Canada included in Technical Committee

- Long-term guideline value from RIAQG for formaldehyde was the basis for maximum allowable chamber concentrations
- Exposure studies and emission testing supported the potential benefit
- CSA standard was the foundation of the *Formaldehyde Emissions from Composite Wood Products Regulations* (enacted 2021)

Other standards

Carbon Monoxide Alarms

- Inclusion of low-level CO display, with action recommendations that align with RIAQG
- Follow-up included infographics and *Detect to Protect* retail campaign



CSA 6.19-17

Residential carbon monoxide alarming devices



C22.2 No. 187-15

Electrostatic air cleaners

Electrostatic Air Cleaners

- RIAQG for Ozone (20 ppb) included as a recommendation to reduce exposure (*unable to meet health-based guideline*)
- Follow-up included *Choosing A Portable Air Purifier*

For More Information

- Health Canada's Residential Indoor Air Quality Guidelines
<https://www.canada.ca/en/health-canada/services/air-quality/residential-indoor-air-quality-guidelines.html>
- Subscribe to HC air mailing list:
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