

ACROLEIN, CROTONALDEHYDE, AND ARECOLINE

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Table S1.3 Environmental guidelines for exposure to acrolein by inhalation

This supplementary web-only table was produced in draft form by the Working Group and was not subsequently fact-checked or edited. Please report any errors to imo@iarc.fr.

Agency	Acute effects		Subchronic effects		No. of hours	Chronic effects		Critical effect
	ppb	µg/m ³	ppb	µg/m ³		ppb	µg/m ³	
WHO (tolerable air concentration)	0.17	0.4						Non-neoplastic lesions in nasal respiratory epithelium of rats, irritation
ATSDR (minimum risk level)	3 (1–14 days)	6.9	0.04 (15–364 days)	0.09				Acute: nasal and throat irritation and decreased respiratory rate in humans Intermediate: nasal epithelial metaplasia in rats
ANSES (2013) (indoor air in France)		6.9 (1 hour)		0.8 (up to 1 year)				Respiratory epithelium
Canada Indoor Air (indoor air reference level)						0.17	0.40	
Canada Indoor Air (proposed)		38					0.44	
USEPA (RfC)	—	—	—	—			0.02	Nasal lesions
CA REL	1.1	2.5	0.03	0.7	8h	0.15	0.35	Ocular irritation/lesions in respiratory epithelium/lesions in respiratory epithelium
1 h/ 8 h/ chronic								
Texas ReV	4.8	11	4.8	11	24	1.2	2.7	Eye, nose, & throat irritation & decreased respiratory rate in humans/same/mild hyperplasia & lack of recovery of the respiratory epithelium in Fischer 344 rats

WHO Tolerable air concentration (IPCS, 1992).

ATSDR Minimum Risk Level = 3 ppb irritation, ATSDR Toxicological profile for acrolein 2007 (ATSDR, 2007).

ANSES (2013) (Agence Nationale de Sécurité Sanitaire Alimentation Environnement Travail) (Proposition de valeurs guides de qualité d'air intérieur. L'acroléine. Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail, <http://www.anses.fr/en/documents/AIR2011sa0354Ra.pdf>).

Santé Canada et Environnement Canada (2000).

ATSDR Minimum Risk Level = 3 ppb irritation.

USEPA RfC = US Environmental Protection Agency Reference Concentration for Inhalation Exposure (RfC), from Integrated Risk Information System (IRIS) Acrolein CASRN 107-02-8 | DTXSID5020023, last revised 2003. Available from: https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=364.

CA REL = California Reference Exposure Level (REL), California Environmental Protection Agency.

OEHHA (2008). Technical Supporting Document for Noncancer RELs, Appendix D1. Updated July 2014. Available from: <https://oehha.ca.gov/air/chemicals/acrolein>.

Texas ReV = Texas Reference Value (ReV). Texas Commission on Environmental Quality (2015). Development Support Document for Acrolein by Allison Jenkins, M.P.H. TCEQ. Revised: March 14, 2014; Revised: September 14, 2015. Available from: <https://www.tceq.texas.gov/assets/public/implementation/tox/dsd/final/acrolein.pdf>.

References

- ANSES (2013). Proposition de valeurs guides de qualité d'air intérieur. L'acroléine. France: Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail. Available from: <http://www.anses.fr/en/documents/AIR2011sa0354Ra.pdf>. [French]
- ATSDR (2007). Toxicological profile for Acrolein. Atlanta (GA), USA: Agency for Toxic Substances and Disease Registry. Available from: <https://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=557&tid=102>.
- IPCS (1992). Acrolein. Environmental health criteria 127. Geneva, Switzerland: United Nations Environment Programme, International Labour Organization, World Health Organization. Available from: <http://www.inchem.org/documents/ehc/ehc/ehc127.htm>, accessed 31 May 2021.
- OEHHA (2008). Acrolein. Technical supporting document for noncancer RELs, Appendix D1. Updated July 2014. USA: California Office of Environmental Health Hazard Assessment. Available from: <https://oehha.ca.gov/chemicals/acrolein>
- Santé Canada et Environnement Canada (2000). Liste des substances d'intérêt prioritaire, Rapport d'évaluation. Acroléine. Québec, Canada: Environnement Canada et Santé Canada. [French].
- Texas Commission on Environmental Quality (2015). Acrolein. Report prepared by Jenkins A. USA: Texas Commission on Environmental Quality. Available from: <https://www.tceq.texas.gov/assets/public/implementation/tox/dsd/final/acrolein.pdf>.