

Appendix 1 Search strategies

PubMed/MEDLINE

No.	Search strategy
#1	("chronic obstructive pulmonary disease" OR COPD OR "Pulmonary Disease, Chronic Obstructive"[Mesh])
#2	("Particulate matter" OR "PM2.5" OR "PM(2.5)" OR "PM10" OR "PM(10)")
#3	(biomarker* OR "Biomarkers"[Mesh])
#4	2012/01/01:3000/12/31[Date – Publication]
#6	#1 AND #2 AND #3 AND #4

Ovid Embase

No.	Search strategy
#1	('chronic obstructive pulmonary disease' OR COPD OR 'chronic obstructive lung disease'/exp)
#2	('Particulate matter' OR 'PM2.5' OR 'PM(2.5)' OR 'PM10' OR 'PM(10)')
#3	(biomarker* OR 'biological marker'/exp)
#4	[2012-2022]/py
#5	[english]/lim
#6.	#1 AND #2 AND #3 AND #4 AND #5

Cochrane Library

No.	Search strategy
#1	MeSH descriptor: [Pulmonary Disease, Chronic Obstructive] explode all trees
#2	"chronic obstructive pulmonary disease" OR COPD
#3	#1 OR #2
#4	"Particulate matter" OR "PM2.5" OR "PM(2.5)" OR "PM10" OR "PM(10)"
#5	MeSH descriptor: [Biomarkers] explode all trees
#6	biomarker*:ti
#7	#5 OR #6
#8	#3 AND #4 AND #7

Table S1 List of excluded studies after full-text screening

No	Excluded studies	Reason for exclusion
1	Pirozzi C, Sturrock A, Weng HY, et al. Effect of naturally occurring ozone air pollution episodes on pulmonary oxidative stress and inflammation. <i>Int J Environ Res Public Health</i> 2015;12:5061-75.	Study without biomarkers, inappropriate exposure
2	Inui T, Nakamoto K, Sada M, et al. Influence of gene polymorphism on biological markers in patients with asthma and COPD associated with air pollutants (2015 APSR congress abstract).	Abstract only
3	Balasubramanian S, Gunasekaran K, Sasidharan S, et al. MicroRNAs and Xenobiotic Toxicity: An Overview. <i>Toxicol Rep</i> 2020;7:583-95.	Review article
4	Benedikter BJ, Wouters EFM, Savelkoul PHM, et al. Extracellular vesicles released in response to respiratory exposures: implications for chronic disease. <i>J Toxicol Environ Health B Crit Rev</i> 2018;2:142-60.	Review article
5	Corradi M, Goldoni M, Mutti A. A review on airway biomarkers: exposure, effect and susceptibility. <i>Expert Rev Respir Med</i> 2015;9:205-20.	Review article
6	Elvidge T, Matthews IP, Gregory C, et al. Feasibility of using biomarkers in blood serum as markers of effect following exposure of the lungs to particulate matter air pollution. <i>J Environ Sci Health C Environ Carcinog Ecotoxicol Rev</i> 2013;31:1-44.	Review article
7	Kim HJ, Choi MG, Park MK, Seo YR. Predictive and Prognostic Biomarkers of Respiratory Diseases due to Particulate Matter Exposure. <i>J Cancer Prev</i> 2017;22:6-15.	Review article