



Rapid Review: What effect does wearing a mask or respirator during combustion-derived air pollution episodes have on concentrations of pollutants and human health endpoints?

Appendix 1: Search Strategy

On April 23, 2025, the following four databases were searched using the search terms and parameters below.

Database	Search parameters
MEDLINE	Search terms listed below
Embase	
CINAHL	
Environment Complete	

A special issue of Environmental Science & Technology – [Emissions, Chemistry, and the Environmental Impacts of Wildland Fire](#) – and the following four journals were also hand searched, from 2004 (or journal’s inception) to current issue:

- [Journal of Exposure Science & Environmental Epidemiology](#)
 - Volumes 14 (2004) to 35 (2025)
- [Current Pollution Reports](#)
 - Volumes 1 (2015) to 11 (2025)
- [Aerosol and Air Quality Research](#)
 - Volumes 4 (2004) to 24 (2024)
- [International Journal of Disaster Risk Reduction](#)
 - Volumes 1 (2012) to 123 (2025)

The reference lists of related systematic reviews were screened and subject matter experts in the field were consulted.

This search builds upon the search conducted in the first version of this rapid review (date limit: January 1, 2004 to November 21, 2024). An [archived copy](#) of the previous search strategy is available.

MEDLINE

Line	Query
1	(Wildfire or wildfires or forest fire or brushfire or grass fire or bushfire or prescribed fire or controlled burns or vegetation fire or peat fire or fire smoke or wildfire smoke or fire season).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]
2	Fires/ or Wildfires/
3	((fire or fires or conflagration or combustion or burn*) adj10 (urban or wood or wild or wildland or "wild land" or wilderness or landscape or bush or brush or forest or tree or prescribed or cultural or crop or agricultural or agriculture or vegetation or peat or biomass or pile or residual or lightning or "lightning strike" or ground or surface or interface or "land clearing*" or "land clearance" or building* or home* or house* or residence* or hotel or apartment* or condominium* or multiplex or duplex or multi-unit or highrise* or high-rise* or office* or tower* or urban or container or dockyard or dock or multiunit or "coal mine" or "coal seam" or industrial or infrastructure or landfill* or dump* or refuse or tire* or tyre* or rubber or plastic* or chemical* or metallic* or stove* or woodstove* or cookstove* or fireplace)).ti. or ((fire or fires or conflagration or combustion or burn*) adj10 (urban or wood or wild or wildland or "wild land" or wilderness or landscape or bush or brush or forest or tree or prescribed or cultural or crop or agricultural or agriculture or vegetation or peat or biomass or pile or residual or lightning or "lightning strike" or ground or surface or interface or "land clearing*" or "land clearance" or building* or home* or house* or residence* or hotel or apartment* or condominium* or multiplex or duplex or multi-unit or highrise* or high-rise* or office* or tower* or urban or container or dockyard or dock or multiunit or "coal mine" or "coal seam" or industrial or infrastructure or landfill* or dump* or refuse or tire* or tyre* or rubber or plastic* or chemical* or metallic* or stove* or woodstove* or cookstove* or fireplace)).ab.
4	(wildfire* or bushfire* or brushfire* or "prescribed burn*" or "crop burn*" or "biomass burn*" or "cultural burn*" or "agricultural burn*" or "burning home*" or "burning house*").af.
5	(fire* adj8 (crown* or canop* or foliage or structure or structural or smoulder* or flam* or char or smok* or woodsmoke or haze or pollut* or "dirty air" or non-PM* or "non-particulate matter" or "fine particle*" or "particle emission*" or "particulate emission*" or "volatile particulate*" or "particle pollution" or gas* or dust or pollen or toxin or fung* or bacteria or mould or mold or CO)).af.
6	1 or 2 or 3 or 4 or 5
7	(Air filtration or air filters or air purifiers or air cleaning devices or portable air filters or HVAC systems or HEPA filters or air quality control or air purification systems).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]
8	Air Filters/ or Air Pollution, Indoor/
9	((filtrat* or filter or vent* or "air clean*" or purifier* or purification or fan* or HEPA or MERV or Corsi-Rosenthal or "box fan*" or sorbent* or "air condition*" or "DIY cleaner" or "do-it-yourself cleaner" or "electrostatic precipitator" or ionizer or "UV germicidal irradiation" or plasma or "air scrubber" or "ozone generator" or "activated carbon" or "air sterilizer" or "photocatalytic oxidation" or charcoal or CADR or "clean air" or hygroscopicity) not (aqueous or water or ventilator* or ventricle* or ventricular or ventral or ventriculitis)).ti. or ((filtrat* or filter or vent* or "air clean*" or purifier* or purification or fan* or HEPA or MERV or Corsi-Rosenthal or "box fan*" or sorbent* or "air condition*" or "DIY cleaner" or "do-it-yourself cleaner" or "electrostatic precipitator" or "ionizer UV germicidal irradiation" or plasma or "air scrubber" or "ozone generator" or "activated carbon" or "air sterilizer" or "photocatalytic oxidation" or charcoal or CADR or "clean air" or hygroscopicity) not (aqueous or water or ventilator* or ventricle* or ventricular or ventral or ventriculitis)).kw.

10	7 or 8 or 9
11	6 and 10
12	limit 11 to (english language and yr="2024 -Current")

Embase

Line	Query
1	wildfire/
2	forest fire/
3	fire/
4	smoke/
5	(Wildfire or wildfires or forest fire or brushfire or grass fire or bushfire or prescribed fire or controlled burns or vegetation fire or peat fire or fire smoke or wildfire smoke or fire season).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word]
6	((fire or fires or conflagration or combustion or burn*) adj10 (urban or wood or wild or wildland or "wild land" or wilderness or landscape or bush or brush or forest or tree or prescribed or cultural or crop or agricultural or agriculture or vegetation or peat or biomass or pile or residual or lightning or "lightning strike" or ground or surface or interface or "land clearing*" or "land clearance" or building* or home* or house* or residence* or hotel or apartment* or condominium* or multiplex or duplex or multi-unit or highrise* or high-rise* or office* or tower* or urban or container or dockyard or dock or multiunit or "coal mine" or "coal seam" or industrial or infrastructure or landfill* or dump* or refuse or tire* or tyre* or rubber or plastic* or chemical* or metallic* or stove* or woodstove* or cookstove* or fireplace)).ti. or ((fire or fires or conflagration or combustion or burn*) adj10 (urban or wood or wild or wildland or "wild land" or wilderness or landscape or bush or brush or forest or tree or prescribed or cultural or crop or agricultural or agriculture or vegetation or peat or biomass or pile or residual or lightning or "lightning strike" or ground or surface or interface or "land clearing*" or "land clearance" or building* or home* or house* or residence* or hotel or apartment* or condominium* or multiplex or duplex or multi-unit or highrise* or high-rise* or office* or tower* or urban or container or dockyard or dock or multiunit or "coal mine" or "coal seam" or industrial or infrastructure or landfill* or dump* or refuse or tire* or tyre* or rubber or plastic* or chemical* or metallic* or stove* or woodstove* or cookstove* or fireplace)).ab.
7	(fire* adj8 (crown* or canop* or foliage or structure or structural or smoulder* or flam* or char or smok* or woodsmoke or haze or pollut* or "dirty air" or non-PM* or "non-particulate matter" or "fine particle*" or "particle emission*" or "particulate emission*" or "volatile particulate*" or "particle pollution" or gas* or dust or pollen or toxin or fung* or bacteria or mould or mold or CO)).af.
8	(wildfire* or bushfire* or brushfire* or "prescribed burn*" or "crop burn*" or "biomass burn*" or "cultural burn*" or "agricultural burn*" or "burning home*" or "burning house*").af.
9	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10	air filter/
11	air pollution control/
12	air cleaning system/
13	air quality/ or air quality control/
14	indoor air pollution/
15	(Air filtration or air filters or air purifiers or air cleaning devices or portable air filters or HVAC systems or HEPA filters or air quality control or air purification systems or ventilation systems or air quality

	management).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word]
16	((filtrat* or filter or vent* or "air clean*" or purifier* or purification or fan* or HEPA or MERV or Corsi-Rosenthal or "box fan*" or sorbent* or "air condition*" or "DIY cleaner" or "do-it-yourself cleaner" or "electrostatic precipitator" or ionizer or "UV germicidal irradiation" or plasma or "air scrubber" or "ozone generator" or "activated carbon" or "air sterilizer" or "photocatalytic oxidation" or charcoal or CADR or "clean air" or hygroscopicity) not (aqueous or water or ventilator* or ventricle* or ventricular or ventral or ventriculitis)).ti. or ((filtrat* or filter or vent* or "air clean*" or purifier* or purification or fan* or HEPA or MERV or Corsi-Rosenthal or "box fan*" or sorbent* or "air condition*" or "DIY cleaner" or "do-it-yourself cleaner" or "electrostatic precipitator" or "ionizer UV germicidal irradiation" or plasma or "air scrubber" or "ozone generator" or "activated carbon" or "air sterilizer" or "photocatalytic oxidation" or charcoal or CADR or "clean air" or hygroscopicity) not (aqueous or water or ventilator* or ventricle* or ventricular or ventral or ventriculitis)).kw.
17	10 or 11 or 12 or 13 or 14 or 15 or 16
18	9 and 17
19	limit 18 to (english language and yr="2024 -Current")

CINAHL

Line	Query	Limiters/Expanders
S17	S10 AND S16	Limiters - Publication Date: 20241001-20250531; English Language; Peer Reviewed Search modes - Proximity
S16	S11 OR S12 OR S13 OR S14 OR S15	Search modes - Proximity
S15	(Air filtration OR air filters OR air purifiers OR air cleaning devices OR portable air filters OR HVAC systems OR HEPA filters OR air quality control OR air purification systems OR ventilation systems OR air quality management)	Search modes - Proximity
S14	TI ((filtration or filtrate or filter or vent or venting or ventilation or "air cleaner" or "air cleaners" or purifier or purification or fan or HEPA or MERV or Corsi-Rosenthal or "box fan" or "box fans" or sorbent or "air conditioner" or "air conditioning" or "DIY cleaner" or "do-it-yourself cleaner" or "electrostatic precipitator" or ionizer or "UV germicidal irradiation" or plasma or "air scrubber" or "ozone generator" OR "activated carbon" or "air sterilizer" or "photocatalytic oxidation" or charcoal or CADR or "clean air") NOT TI ((aqueous or water or ventilator or ventricle or ventricular or ventral or ventriculitis)) OR AB ((filtration or filtrate or filter or vent or venting or ventilation or "air cleaner" or "air cleaners" or purifier or purification or fan or HEPA or MERV or Corsi-Rosenthal or "box fan" or "box fans" or sorbent or "air conditioner" or "air conditioning" or "DIY cleaner" or "do-it-yourself cleaner" or "electrostatic precipitator" or ionizer or "UV germicidal irradiation" or plasma or "air scrubber" or "ozone generator" OR "activated carbon" or "air sterilizer" or "photocatalytic oxidation" or charcoal or CADR or "clean air") NOT AB ((aqueous or water or ventilator or ventricle or ventricular or ventral or ventriculitis))	Search modes - Proximity
S13	(MH "Ventilation")	Search modes - Proximity

S12	(MH "Air Filters")	Search modes - Proximity
S11	(MH "Air Pollution, Indoor")	Search modes - Proximity
S10	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9	Search modes - Proximity
S9	TI (fire n8 (crown or canopy or foliage or structure or structural or smoulder or flames or char or smoke or smoking or woodsmoke or haze or pollution or polluted or pollutant or "dirty air" or non-PM or "non-particulate matter" or "fine particle" or "fine particles" or "particle emission" or "particulate emission" or "volatile particulates" or "particle pollution" or gas or gaseous or gases or dust or pollen or toxin or fungi or bacteria or bacterium or mould or mold or CO))	
S8	(TI (wildfire or bushfire or brushfire or "prescribed burn" or "crop burn" or "biomass burn" or "cultural burn" or "agricultural burn" or "burning home" or "burning house"))	
S7	(TI ((fire or conflagration or combustion or burn) n10 (urban or wood or wild or wildland or "wild land" or wilderness or landscape or bush or brush or forest or tree or prescribed or cultural or crop or agricultural or agriculture or vegetation or peat or biomass or pile or residual or lightning or "lightning strike" or ground or surface or interface or "land clearing" or "land clearance" or building or home or house or residence or hotel or apartment or condominium or multiplex or duplex or multi-unit or highrise or high-rise or office or tower or urban or container or dockyard or dock or multiunit or "coal mine" or "coal seam" or industrial or infrastructure or landfill or dump or refuse or tire or tyre or rubber or plastic or chemical or metallic or stove or woodstove or cookstove or fireplace))	
S6	(AB ((fire or conflagration or combustion or burn) n10 (urban or wood or wild or wildland or "wild land" or wilderness or landscape or bush or brush or forest or tree or prescribed or cultural or crop or agricultural or agriculture or vegetation or peat or biomass or pile or residual or lightning or "lightning strike" or ground or surface or interface or "land clearing" or "land clearance" or building or home or house or residence or hotel or apartment or condominium or multiplex or duplex or multi-unit or highrise or high-rise or office or tower or urban or container or dockyard or dock or multiunit or "coal mine" or "coal seam" or industrial or infrastructure or landfill or dump or refuse or tire or tyre or rubber or plastic or chemical or metallic or stove or woodstove or cookstove or fireplace))	Search modes - Proximity
S5	(MH "Environmental Exposure")	Search modes - Proximity
S4	(MH "Smoke")	Search modes - Proximity
S3	(MH "Fires")	Search modes - Proximity
S2	(MH "Wildfires")	Search modes - Proximity
S1	(Wildfire OR wildfires OR forest fire OR brushfire OR grass fire OR bushfire OR prescribed fire OR controlled burns OR vegetation fire OR peat fire OR fire smoke OR wildfire smoke OR fire season)	Search modes - Proximity

Environment Complete

Line	Query	Limiters/Expanders
S15	S13 AND S14	Limiters - Peer Reviewed; Publication Date: 20241120-20250423; English Language Expanders – Apply equivalent subjects Search modes - Boolean/Phrase
S14	S10 OR S12	Expanders – Apply equivalent subjects Search modes - Boolean/Phrase
S13	S5 OR S9	Expanders – Apply equivalent subjects Search modes - Boolean/Phrase
S12	S6 OR S7 OR S8 OR S11	Expanders – Apply equivalent subjects Search modes - Boolean/Phrase
S11	(Air filtration OR air filters OR air purifiers OR air cleaning devices OR portable air filters OR HVAC systems OR HEPA filters OR air quality control OR air purification systems OR ventilation systems OR air quality management)	Expanders – Apply equivalent subjects Search modes - Boolean/Phrase
S10	TI ((filtration or filtrate or filter or vent or venting or ventilation or "air cleaner" or "air cleaners" or purifier or purification or fan or HEPA or MERV or Corsi-Rosenthal or "box fan" or "box fans" or sorbent or "air conditioner" or "air conditioning" or "DIY cleaner" or "do-it-yourself cleaner" or "electrostatic precipitator" or ionizer or "UV germicidal irradiation" or plasma or "air scrubber" or "ozone generator" OR "activated carbon" or "air sterilizer" or "photocatalytic oxidation" or charcoal or CADR or "clean air") NOT TI ((aqueous or water or ventilator or ventricle or ventricular or ventral or ventriculitis)) OR AB ((filtration or filtrate or filter or vent or venting or ventilation or "air cleaner" or "air cleaners" or purifier or purification or fan or HEPA or MERV or Corsi-Rosenthal or "box fan" or "box fans" or sorbent or "air conditioner" or "air conditioning" or "DIY cleaner" or "do-it-yourself cleaner" or "electrostatic precipitator" or ionizer or "UV germicidal irradiation" or plasma or "air scrubber" or "ozone generator" OR "activated carbon" or "air sterilizer" or "photocatalytic oxidation" or charcoal or CADR or "clean air")) NOT AB ((aqueous or water or ventilator or ventricle or ventricular or ventral or ventriculitis))	Expanders – Apply equivalent subjects Search modes - Boolean/Phrase
S9	(AB ((fire or conflagration or combustion or burn) n10 (urban or wood or wild or wildland or "wild land" or wilderness or landscape or bush or brush or forest or tree or prescribed or cultural or crop or agricultural or agriculture or vegetation or peat or biomass or pile or residual or lightning or "lightning strike" or ground or surface or interface or "land clearing" or "land clearance" or building or home or house or residence or	Expanders – Apply equivalent subjects Search modes - Boolean/Phrase

	<p>hotel or apartment or condominium or multiplex or duplex or multi-unit or highrise or high-rise or office or tower or urban or container or dockyard or dock or multiunit or "coal mine" or "coal seam" or industrial or infrastructure or landfill or dump or refuse or tire or tyre or rubber or plastic or chemical or metallic or stove or woodstove or cookstove or fireplace)) OR (TI ((fire or conflagration or combustion or burn) n10 (urban or wood or wild or wildland or "wild land" or wilderness or landscape or bush or brush or forest or tree or prescribed or cultural or crop or agricultural or agriculture or vegetation or peat or biomass or pile or residual or lightning or "lightning strike" or ground or surface or interface or "land clearing" or "land clearance" or building or home or house or residence or hotel or apartment or condominium or multiplex or duplex or multi-unit or highrise or high-rise or office or tower or urban or container or dockyard or dock or multiunit or "coal mine" or "coal seam" or industrial or infrastructure or landfill or dump or refuse or tire or tyre or rubber or plastic or chemical or metallic or stove or woodstove or cookstove or fireplace)) OR (TI (wildfire or bushfire or brushfire or "prescribed burn" or "crop burn" or "biomass burn" or "cultural burn" or "agricultural burn" or "burning home" or "burning house") OR TI (fire n8 (crown or canopy or foliage or structure or structural or smoulder or flames or char or smoke or smoking or woodsmoke or haze or pollution or polluted or pollutant or "dirty air" or non-PM or "non-particulate matter" or "fine particle" or "fine particles" or "particle emission" or "particulate emission" or "volatile particulates" or "particle pollution" or gas or gaseous or gases or dust or pollen or toxin or fungi or bacteria or bacterium or mould or mold or CO))</p>	
S8	(MH "Ventilation")	<p>Expanders – Apply equivalent subjects Search modes - Boolean/Phrase</p>
S7	(MH "Air Filters")	<p>Expanders – Apply equivalent subjects Search modes - Boolean/Phrase</p>
S6	(MH "Air Pollution, Indoor")	<p>Expanders – Apply equivalent subjects Search modes - Boolean/Phrase</p>
S5	S1 OR S2 OR S3 OR S4	<p>Expanders – Apply equivalent subjects Search modes - Boolean/Phrase</p>
S4	(MH "Smoke")	<p>Expanders – Apply equivalent subjects Search modes - Boolean/Phrase</p>
S3	(MH "Fires")	<p>Expanders – Apply equivalent subjects Search modes - Boolean/Phrase</p>

S2	(MH "Wildfires")	Expanders – Apply equivalent subjects Search modes - Boolean/Phrase
S1	(Wildfire OR wildfires OR forest fire OR brushfire OR grass fire OR bushfire OR prescribed fire OR controlled burns OR vegetation fire OR peat fire OR fire smoke OR wildfire smoke OR fire season)	Expanders – Apply equivalent subjects Search modes - Boolean/Phrase