



Users Guide

Bushfires and other vegetative fires

Protecting community health and well being
from smoke exposure

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Introduction

This guide is intended for the Environmental Health Directorate Emergency Response Team (EHDERT) however other agencies and local government officers involved in responding to fire incidents may find this document useful for assessing public risk to smoke.

The information in this document should not take precedence over advice and guidance provided by State Emergency Management Plans and Policies. Neither should the advice take precedence over evacuation directives of the Department of Fire and Emergency Services.

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Smoke exposure scenarios

Commonly expected scenario: Monitoring data is available

1. Officers from the Department of Environment and Conservation (DEC) or Chemistry Centre WA (CCWA) have monitored the air quality for particulate matter (PM) in areas surrounding the bushfire – especially downwind of the fire and in areas where high health risk premises such as hospitals, schools and day centres etc may be present.
2. Assuming the Department of Fire & Emergency Services (DFES) has not issued evacuation orders, compare the reported concentration against the second column in table 1 - $\text{PM}_{10} \mu\text{g}/\text{m}^3 \leq 4$ hour average. This column can also be used for concentrations reported as $\text{PM}_{2.5}$.
3. Follow advice provided in Table 1 and refer to Table 2 for the Recommended Health Advisories. The advice against each dot point in each category can be used together or individually as appropriate to the circumstance.
4. Complete and approve one of the generic media statements to be released by the duty DOH media officer OR Use the content of the media statements to advise media officers from other agencies.

Scenario: Monitoring data is unavailable.

1. Smoke from the blaze is visible from a distance and no monitoring data is available. For example country or rural locations or small roadside blazes.
2. Consider using smoke visibility for assessing risk and compare distances against column 3 – Visibility km.
3. Making personal observations to determine smoke concentrations using this method
 - Face away from the sun.
 - Determine the limit of your visibility range by looking for high contrast targets at known distances. A high contrast target is one that is easily seen under normal conditions (eg. a large tree or a building).
 - The visible range is the point at which even the high targets totally disappear.

NB: At times, the visibility index may be hard to use, especially if specific landmarks at known distances are not available for judging visibility range, or at dawn or dusk. The visibility categories for PM levels only apply in dry air conditions. For a given PM level, visibility decreases substantially at relative humidity above 65%, therefore, this method of estimation should not be used under conditions of high humidity.

Scenario: Evacuation advice VS shelter-in-place

1. The smoke hazard is at a distance to the fire front and DEFS has not issued evacuation orders for the area however DEC may be seeking advice on smoke exposure risk to inform their evacuation response.
2. Most people will self-evacuate in areas of dense smoke. It is appropriate to implement the level 4 or 5 response category.
3. A rapid risk assessment based on length of potential exposure and the need to evacuate high risk individuals should be made in association with DEC and DFES. **The decision to evacuate is not a decision that can be readily made on PM concentration alone** because it may not be feasible nor appropriate to evacuate individuals where doing so may expose them to higher concentrations of smoke than sheltering in place (even a leaky one) may provide.
4. Some general rules for shelter-in-place can be provided to the public:
 - Do not use air conditioners unless it can be operated in a mode that recirculates air with the fresh air intake turned off.
 - If it is too warm to stay inside with the windows closed, or if you are very sensitive to smoke, seek shelter in a designated 'clean air' refuge..
 - People with pre-existing respiratory or cardiovascular illnesses should be vigilant and follow their pre-prepared action/treatment plan.
 - Stop any physical exertion such as exercise or housecleaning.
 - Do not vacuum, because vacuuming stirs up particles
 - Do not smoke or burn anything, such as candles or incense, anywhere in the house
 - Do not use household products that can increase indoor chemical pollution. These include air purifying oils/scents or sprays, cleaning sprays, pesticides and perfumes.
 - Drinking plenty of fluids but not alcohol
 - Wear light clothes
 - Keep an eye on elderly neighbours or other people at risk.

Frequently Asked Questions

Asthma: Most asthmatics are self-informed on asthma triggers nevertheless they may be caught unprepared – as a precaution asthmatics and people with other respiratory conditions should be advised to self-evacuate.

Masks: Most masks will not provide adequate protection from the small particles and chemicals that are found in bushfire smoke.

Table 1 : Particulate Matter (PM) concentration & Recommended actions

Alert Level	PM ₁₀ µg/m ³ ≤ 4 hour average	Visibility km	Information & Recommended Actions for: <ul style="list-style-type: none"> • Environmental Health Response Team • Incident Response Teams – DEC/DFES • Officers responding to Media enquiries (Generic Media Statements attached) 	Recommended Health Advisory (PTO)
1	50-75	> 16	Information: Be aware that any increase in particulate matter (PM) above background affects highly susceptible groups such as those with more severe respiratory or cardio-vascular disease. People with asthma are in this group. Action: If smoke is forecast, be prepared to provide information and Health Advice as required.	1
2	76 - 150	10 - 16	Information: As concentrations increase, there is an increased chance that people with mild to moderate respiratory or cardiovascular disease may be affected. Action: If smoke haze is expected to be prolonged (>4 hrs), evaluate and be prepared to issue public Health Advisory if necessary.	2
3	151 – 300	5 - 10	Information: There is an increased risk of respiratory/irritant symptoms among the general community. Strenuous physical activity like sports or work outside may cause even very healthy people to experience symptoms. Action: If smoke haze is expected to persist (>4 hrs) be prepared to issue public Health Advisory and consider:- <ul style="list-style-type: none"> • Alerting schools and day care centres to move children into areas with central filtered air conditioning (some newer buildings may be more protective than older 'leakier' ones) • Limit or cancel public scheduled outdoor activities, based on event, anticipated crowd numbers, and travel considerations. 	3
4	301 – 500	1 - 5	Information: Everyone is at risk of respiratory/irritant symptoms and irritation. As PM concentrations increase so does the risk of premature mortality in people with respiratory and cardiac disease. Action: Issue public Health Advisory. If smoke haze is expected to persist (>4 hrs) consider : <ul style="list-style-type: none"> • Advising people at risk to leave the area if safe to do so or take frequent clean-air breaks. • Alerting schools and day care centres to move children into areas with central filtered air conditioning (some newer buildings may be more protective than older 'leakier' ones) • Cancelling scheduled public outdoor activities. 	4
5	> 500	<1	Information: Everyone is at risk of respiratory/irritant symptoms and irritation. There is a big increase in the risk of premature mortality in people with respiratory and cardiac disease. Most healthy people will experience some level of discomfort. Action: Issue public Health Advisory. If smoke haze is expected to persist (>4 hrs): <ul style="list-style-type: none"> • Advise people at risk to leave the area if safe to do so. • Consider the need to evacuate people at high risk that require assistance. • Consider closing schools and day care centres – although new schools may be more protective than older homes. • Cancel all scheduled public outdoor activities. 	5

Table 2: Recommended health advisories

Alert Level	Recommended Health Advisories
1	<ul style="list-style-type: none"> • People with pre-existing asthma or other severe respiratory disease or heart disease may feel the effects of smoke and should limit exertion and consider staying inside. • Have relevant medication at hand and if you experience symptoms contact your own doctor or Health Direct on 1800 022 2222.
2	<ul style="list-style-type: none"> • Limit your physical activity and if you feel symptoms related to the smoke haze, stay inside with doors and windows closed. • Observe young children, the elderly and pregnant women, as they may be more susceptible to smoke effects. • Keep cool but do not use an air-conditioner unless the fresh-air intake can be turned off. • Some people may experience symptoms. Contact your own doctor or Health Direct on 1800 022 2222 if symptoms worsen.
3	<ul style="list-style-type: none"> • Limit your physical activity and if you feel symptoms related to the smoke haze, stay inside with doors and windows closed. • If your home is letting in a lot of outside air - go to an air-conditioned venue with good filtration like a shopping centre or community library. • Observe young children, the elderly and pregnant women, as they may be more susceptible to smoke effects • Keep cool but do not use an air-conditioner unless the fresh-air intake can be turned off. • Some people may experience symptoms. Contact your own doctor or Health Direct on 1800 022 2222 if symptoms worsen.
4	<ul style="list-style-type: none"> • Everyone is at risk of smoke irritation. Everyone should avoid strenuous outdoor exercise. • People with pre-existing respiratory and cardiac conditions, the elderly, young children, and pregnant women are advised to take 'fresh-air' breaks at the nearest public air-conditioned centre or away from the area. • Everyone should consider going indoors. Keep windows and doors shut but if your home is letting in a lot of outside air - go to an air-conditioned venue such as a shopping centre or community library. • Be aware of heat stress, and drink plenty of fluids but not alcohol. • Contact your own doctor or Health Direct on 1800 022 2222 if symptoms worsen.
5	<ul style="list-style-type: none"> • Everyone is at risk of smoke irritation and every one should limit exercise both indoors and outdoors. • People with pre-existing respiratory and cardiac conditions, the elderly, young children, and pregnant women should take 'fresh-air' breaks at the nearest public air-conditioned centre or 'clean-air' facility until air quality improves. • When indoors keep windows and doors shut but if your home is letting in a lot of outside air - go to an air-conditioned venue such as a shopping centre or community library. • Be aware of heat stress, and drink plenty of fluids but not alcohol. • Contact your own doctor or Health Direct on 1800 022 2222 if symptoms worsen.

Suggested Generic Media Statement 1

Department of Health urges care in smoke haze

The Department of Health has urged the public to take health precautions in response to bushfires burning in (insert region / area)

Department of Health warns that exposure to smoke from the bushfires could be particularly harmful to the elderly and the very young as well as people with respiratory or heart conditions.

Department of Health advises that a number of precautions should be taken to minimise the exposure of those at-risk to environmental smoke in order to prevent short-term health effects.

People are advised to:

- Switch off those air conditioners that do not allow the fresh air intake to be turned off; and
- Shut doors and windows; and
- Only venture outside if necessary unless leaving the area. This is particularly important for those people with asthma and other respiratory conditions.
- Be alert to heat stress and keep cool and drink plenty of fluids except alcoholic drinks.
- People with asthma and pre-existing respiratory, cardiovascular illnesses or diabetes should be vigilant and follow their pre-prepared action/treatment plan.
- Look out for elderly neighbours or other people at risk.

These steps should be followed until further notice and the Chief Health Officer urges people in the surrounding areas to the fire to take whatever steps necessary to isolate themselves from the smoke.

Exposure to smoke from fires can exacerbate asthma and other respiratory conditions, cause coughing and shortness of breath, and temporarily irritate the eyes, nose and throat.

People with respiratory or heart disease, the elderly and children should limit prolonged exertion and stay indoors when possible.

Peoples with known pre-existing conditions and the elderly should not participate in sport or physical exertion that increases cardiovascular activity.

In areas severely affected by smoke even healthy people should reduce the intensity of any required exercise.

Anyone experiencing worsening symptoms due to smoke should seek medical attention from their GP or from Health Direct on 1800 022 2222.

MEDIA CONTACT: (08) 9222 4333

Suggested Generic Media Statement 2

Department of Health alerts public of smoke haze

People with respiratory conditions should take extra care to avoid exposure to smoke caused by controlled burns in [the South West of Western Australia].

(Insert Title) (insert name) said exposure to smoke from fires could worsen asthma and other respiratory conditions, cause coughing and shortness of breath and irritate the eyes, nose and throat.

A number of precautions can be taken to minimise the exposure to environmental smoke.

"People are advised to remain indoors as much as possible, limit physical exertion and keep doors and windows closed," (insert name) said.

"People with respiratory or heart disease, the elderly and young children should take particular care and are encouraged to monitor their health."

Anyone experiencing adverse health effects from the smoke should consult their medical practitioner about the appropriate management of their health condition or for health advice call *Healthdirect Australia* 24 hours a day on 1800 022 222.

MEDIA CONTACT: (08) 9222 4333

This document can be made available in alternative formats on request for a person with a disability.

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