



Environment Protection Authority

Guide to conducting field odour surveys



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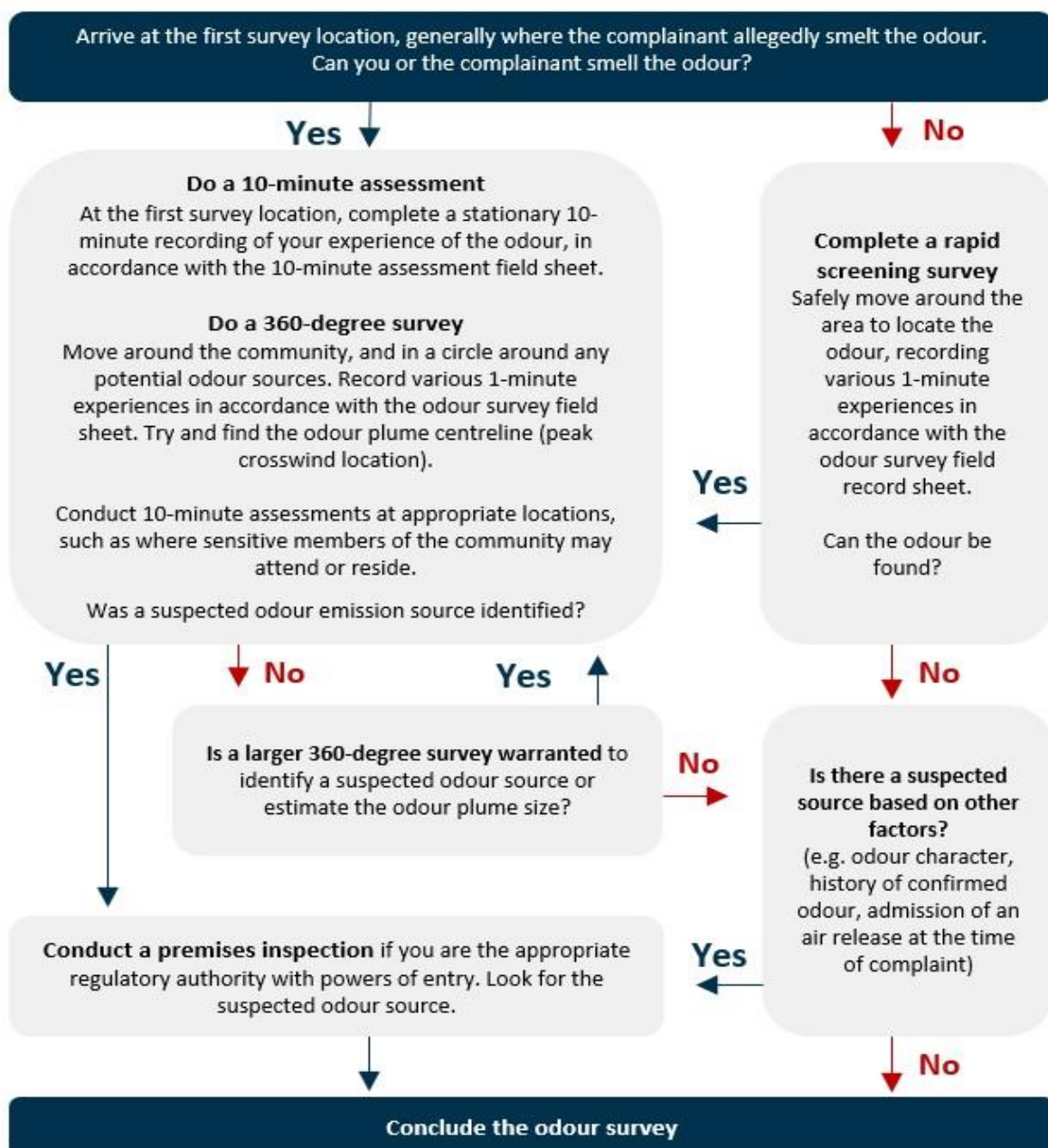
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1. Conducting the odour survey

Odours are often intangible, invisible and intermittent, making odour allegations and impacts difficult to verify and quantitatively measure. This Guideline to Field Odour Surveys provides direction and methods that will help to:

- confirm the source of odours
- gather information about the nature and extent of the odour
- assist with the implementation and assessment of odour controls or strategies to mitigate odour
- prompt targeted regulatory oversight by an authority.

Figure 1 (below) provides a framework for conducting a field odour survey. The survey and assessment types referred to are detailed in Sections 1.1 to 1.3. A glossary of key terms used is listed in Section 2.



Observations of odour character for all survey methods should describe an easily identifiable item or substance (such as banana, chicken soup, sulfur, cooked biscuits or mothballs) and not a generic or group term (such as chemical, industrial, toxic or bad).

All observations should be made when standing in a stationary position and breathing normally rather than sniffing. Documenting observations of both the presence and absence of an odour are important.

All actions undertaken while conducting an odour survey should be carried out safely and in accordance with relevant work health and safety legislation, policies, procedures and guidelines.

Any observations or comments should be facts, not opinions. For example, 'I felt lightheaded' is appropriate as this was a physical impact experienced. It may not be appropriate to record 'the odour was offensive' or 'the odour was bad' as these are an individual's opinion.

1.1. Rapid screening survey

The rapid screening survey is used to safely but rapidly move through the area searching for an odour. If an odour is detected, then progress to a 360-degree survey.

All rapid screening survey observations should be made over **an approximate 1-minute attendance** at each location. Observations should be recorded on the provided Odour survey field record sheet.

The rapid screening survey methodology is detailed in Table 1.

Table 1 Rapid screening survey methodology

Step	Task	Description
1	Attend the location of an alleged odour.	Often outside the complainant's residence. Record observations on the field sheet.
2	If no odour is detected, move to various locations until an odour is smelled.	Record observations at each location. This process should be done rapidly, but without rushing in an unsafe manner.
3	Once an odour is detected, conduct a 10-minute assessment and progress to a 360-degree survey.	Start at either the location where the odour was first detected or where a peak odour was smelt.
4	If no odour is detected anywhere, conclude the odour survey for that day.	

1.2. 10-minute assessment

The 10-minute assessment is undertaken before and during a 360-degree survey at locations in the vicinity of the odour. This may include at the complainant's location, upwind and downwind of a suspected odour source, and locations where sensitive members of the community may attend or reside.

During a 10-minute assessment, observations of odour intensity, odour character and wind change are **recorded at 10-second intervals for 10 minutes**. Even if the wind is fluctuating, finish the full 10-minute period. Observations should be recorded on the provided 10-minute odour assessment field record sheet.

The 10-minute assessment methodology is detailed in Table 2.

Table 2 10-minute assessment methodology

Step	Task	Description
1	Attend the location.	Where the 10-minute assessment is to be undertaken.
2	Record the wind direction and speed.	At the start of the assessment.
3	Record the odour intensity.	Smelled at 10-second intervals for a period of 10 minutes.
4	Record the odour character.	When the odour is first noticed or when the character changes.
5	Record changes in the wind direction and speed.	During the 10-minute period and at the end.
6	Record any concluding comments.	Your impressions of the odour experienced. These should be facts, not opinions.

1.3. 360-degree survey

The 360-degree survey is used when an odour can be detected at the location of an alleged odour, or when a rapid screening survey has been completed that identified odours at other locations.

The 360-degree survey involves moving around the area where the odour complaint originated from and in a circuit fully around one or more suspected odour sources. The presence of downwind odours from a potential source without upwind odours is a key observation in identifying a likely source of odour. The 360-degree survey also assists in assessing the potential spread of the odour plume.

The number of locations attended should be selected with an aim to obtain sufficient evidence to prove the source of the odour beyond reasonable doubt (including ruling out all other potential sources of the odour).

All 360-degree survey observations should be made over **an approximate 1-minute attendance** at a location. Observations should be recorded on the provided odour survey field record sheet.

During the 360-degree survey, 10-minute assessments should be carried out at sensitive, and other appropriate, locations as they provide a more robust dataset (refer to Section 1.2).

The 360-degree survey methodology is detailed in Table 3.

Table 3 360-degree survey methodology

Step	Task	Description
1	Attend the first location.	Where the odour is present, generally the complainant's location or another location as identified by a rapid screening survey. Undertake a 10-minute assessment.
2	Find the plume centreline.	Move crosswind (90 degrees to the wind direction) to identify the peak odour location (plume centreline). The plume centreline aids in identifying a suspected odour source (i.e. the source is likely to be directly upwind along the plume centreline).
3	Continue to other locations.	Move fully around a suspected odour source. Record observations at each location and conduct 10-minute assessments where appropriate.
4	Expand the survey path.	Do this if the survey identifies the emission may be coming from an alternative location or that further information is useful.

5	Survey the suspected source premises boundary.	Do this if it is safe and accessible. This should be done outside the suspected source premises.
6	Conduct a premises inspection.	Inspect the suspected odour source premises, if appropriate, and you are the appropriate regulatory authority with powers to conduct the inspection.
7	Conclude the odour survey.	

2. Glossary of terms

Term	Description
10-minute assessment	An odour assessment carried out over a period of 10 minutes in a fixed location. Odour intensity and odour character are recorded at 10-second intervals for 10 minutes.
360-degree survey	A survey involving moving in a circuit fully around a suspected odour source and recording observations of odour over a 1-minute period.
Beaufort scale	A scale of wind speed based on a visual estimation of the wind's effects.
complaint location	The location where the odour was smelt that resulted in a complaint being made.
crosswind	At right angles (90 degrees) to the wind direction.
downwind	A location where the wind is blowing from a suspected odour source.
evasive actions	Actions taken by a person to mitigate against the impact of an odour that is being experienced (e.g. closing windows, moving indoors, cancelling an outdoor event or taking washing off the line).
hedonic tone	How pleasant the odour is, on a scale from very pleasant to very unpleasant.
odour character	What the odour smells like (e.g. fishy, rotten eggs or solvent).
odour intensity	How strong the odour is, on a scale from very weak to extremely strong.
odour plume	The 'cloud' or area of affectation of detectable odour in the vicinity (usually downwind) of an odour source. The plume will vary in width and length depending on wind, topography, and the shape and size of the structure from which the odour is emitted.
plume centreline	The point on a crosswind transect through an odour plume where the odour is strongest or most intense. This is normally directly downwind from the odour source, although building structures and local topography may also influence the plume centreline location.
rapid screening survey	A survey involving moving rapidly around an area where an odour is suspected of being present and determining whether odour is present at each location.
sensitive location/ sensitive receptor	A location where people are likely to work, reside or congregate and may be impacted by odour. It may include a residential property, a place where people congregate (e.g. restaurant/function centre), an educational or residential facility (e.g. school, childcare centre, hospital or hotel) or a commercial/industrial location.
upwind	A location where the wind is blowing towards the suspected odour source.
wind-gauge	A device to measure the force/speed of the wind. Also referred to as an anemometer.

10-minute odour assessment field record sheet

Location of assessment: _____ Date: _____

Assessor's name: _____ Others present: _____

Reason for assessment (circle): Complaint/Proactive/Other: _____

Report no/s: _____ Start time: _____ Wind direction at start: _____ Wind speed at start: _____

Wind speed and direction must be recorded at the start and end of the assessment. If there is a noticeable change in wind speed or direction during the assessment, mark the column and provide explanatory comment.

Minute	Second	Intensity	Odour character	Wind change	Comments (any impact on comfort, etc.)
1st	0				
	10				
	20				
	30				
	40				
	50				
	0				
	10				
	20				
	30				
	40				
	50				
	0				
	10				
	20				
	30				
	40				
	50				
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	40				
	50				
	0				
	10				
	20				
	30				
	0				
	10				
	20				
	30				

	40
	50
6th	0
	10
	20
	30
	40
	50
7th	0
	10
	20
	30
	40
	50
8th	0
	10
	20
	30
	40
	50
9th	0
	10
	20
	30
	40
	50
10th	0
	10
	20
	30
	40
	50

Comments about odour experienced, with consideration of harm, interference with comfort, strength, nature, duration, character:

Odour survey field record sheet: rapid screening and 360-degree surveys

Assessor's name: _____ Others present: _____ Date: _____ Report no/s: _____ Sheet: ____ of ____

Reason for survey (circle): Rapid screening survey/360-degree survey/Other _____ General area/suburb of assessment: _____

Location	Time	Wind speed	Wind direction	Was an odour detected?	Odour intensity	Odour character	Hedonic tone	Comments on the odour experience
Identification, description or GPS coordinates		Wind-gauge or Beaufort scale (see overleaf)	Measure with compass	(Y/N)	(Strength) See scale overleaf	(What does it smell like?) See list overleaf	(Pleasantness) See scale overleaf	Did the odour interfere with your comfort? If so, how? Were you impacted physically or mentally by the odour? If so, describe? Did you take any evasive actions due to the odour? If so, what?

Consider plotting locations on a map. All parts of the field sheet should be completed. Avoid leaving sections blank.

Scale of odour intensity (strength)

Scale	Description
6	Extremely strong
5	Very strong
4	Strong
3	Distinct
2	Weak
1	Very weak
0	No odour

Scale of hedonic tone

Scale	Description
-4	Extremely unpleasant
-3	
-2	
-1	
0	Neutral
+1	
+2	
+3	
+4	Extremely pleasant

Beaufort scale for wind speed

Scale	Description	How to recognise	~m/s
0	Calm	Smoke rises straight up	0.0–0.2
1	Light air	Smoke drifts	0.3–1.5
2	Light breeze	Wind felt on face; leaves rustle	1.6–3.3
3	Gentle breeze	Flags flap; twigs move all the time	3.4–5.4
4	Moderate breeze	Papers blow; small branches move	5.5–7.9
5	Fresh breeze	Small trees sway	8.0–10.7
6	Strong breeze	Large branches move, wind whistles	10.8–13.8
7	Near gale	Whole trees sway	>13.8

Odour character description examples: add descriptions as appropriate

Number	Description	Number	Description	Number	Description	Number	Description
1	Fragrant	11	Bark-like	21	Like blood, raw meat	31	Like gasoline, solvent
2	Perfumy	12	Woody, resinous	22	Rubbish	32	Fishy
3	Sweet	13	Medicinal	23	Compost	33	Putrid, foul, decayed
4	Fruity	14	Burnt, smoky	24	Silage	34	Paint-like
5	Bakery (fresh bread)	15	Soapy	25	Sickening	35	Rancid
6	Coffee-like	16	Garlic, onion	26	Musty, earthy, mouldy	36	Sulphur smelling
7	Spicy	17	Cooked vegetables	27	Sharp, pungent, acid	37	Dead animal
8	Meaty (cooked, good)	18	Chemical	28	Metallic	38	Faecal (like manure)
9	Sea/marine	19	Etherish, anaesthetic	29	Tar-like	39	Sewer odour
10	Herbal, green, cut grass	20	Sour, acrid, vinegar	30	Oily, fatty	40	Other – please describe