Dandenong South

Community information

EPA VICTORIA

State Government Victoria

Air monitoring program Final report

EPA Victoria has completed an air monitoring program which assessed the impact of the Dandenong South industrial zone on air quality in surrounding residential areas.

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Why and where is EPA monitoring?

In April 2011, EPA initiated an air quality assessment in response to community concerns about emissions from the Dandenong South industrial 2 zone and Lyndhurst prescribed waste landfill.

A 12 month monitoring program was designed to ensure a sound air quality risk assessment of both short term (24 hour) and long term (annual) community exposure to a range of air pollutants. This time period also ensured that seasonal variations were fully considered.

The Department of Health recommended air quality guideline values to compare the measured air levels against. These values are protective of community health, meaning that if short term (24 hour) or long term (annual) air levels are below these values then health effects are not expected.

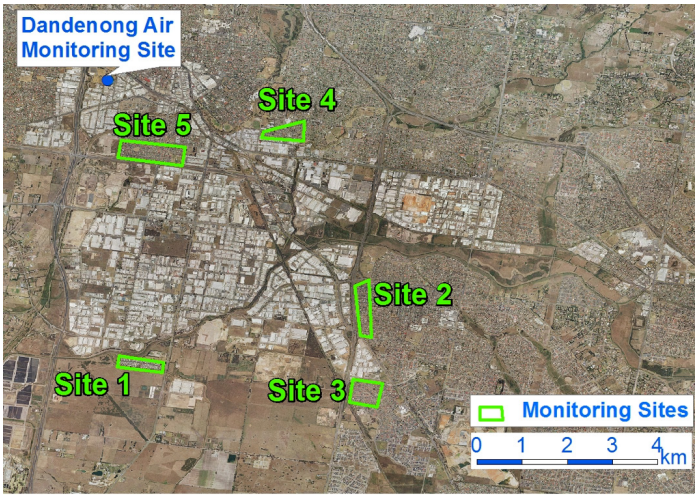
This program concluded in May 2012 with over 12 months of information collected from five residential locations surrounding the industrial zone and Lyndhurst landfill.

The residential monitoring sites were located in Bangholme, Lynbrook, Hampton Park, Doveton and Dandenong South. The general locations are marked in green on the aerial photo below.

This is the fourth and final quarterly report, representing an assessment of all air monitoring results collected from April 2011 to May 2012.

How are the results assessed?

The air quality data is compared against national and international air quality values to assess the risk these air levels may pose to human health. Air quality values are determined by scientific research to protect people's health when they may be in contact with the air pollutant for a short period (up to two weeks) or longer period of one year or more.



PRIORITY POLLUTANTS

The air monitoring measured a specific group of air pollutants, Volatile Organic Compounds (VOCs) with a focus on priority VOCs.

When EPA was designing the air monitoring program in March 2011, a group of 15 compounds were identified as priority pollutants.

EPA's air pollution emission inventory identified these compounds as being in the highest quantities in the Dandenong area.

Priority pollutants:
1. ethanol
2. dichloromethane
3. toluene
4. xylene
5. methyl ethyl ketone
6. ethyl acetate
7. acetone
8. trichloroethylene
9. methyl isobutyl ketone (MIBK)
10. n-hexane
11. benzene
12. tetrachloroethylene
13. styrene
14. ethylbenzene
15. cyclohexane

These values contain a margin of safety that ensures protection of people who may be more sensitive to breathing air pollutants such as children or older people.

The air quality values used for this assessment have been recommended by the Department of Health and taken from the following sources:

- The Air Toxics National Environment Protection Measure (Air Toxics NEPM)
- For pollutants not covered by the Air Toxics NEPM, assessment values have been obtained from the United States Agency for Toxic Substances and Disease Registry (ATSDR), Texas Centre for Environmental Quality (TCEQ) and Ontario Ministry of the Environment (Ontario).

What do the results tell us?

These results show that more than half of the 63 chemical compounds under investigation were not detected. These are listed in Table 2.

Of the 27 chemical compounds that were detected, measurements were compared against short term air quality values (24 hours) and long term air quality values (annual).

Short term (24 hours): Table 1 lists the short-term (24 hour) air quality guideline values for 23 chemicals, as well as the highest single 24 hour measurement taken at each of the five residential locations. All of these measurements are below the corresponding short-term air quality guideline value.

Long term (annual): Table 1 lists the annual air quality guideline values for 23 chemicals. All measurements taken over the monitoring period (ie over a year) have been averaged at each of the five residential locations. All annual averages are well below the corresponding long-term air quality guideline value.

Priority Pollutants: Refer to the text box titled 'Priority Pollutants'. Of the 15 priority pollutants, two were not detected during this monitoring program. Of the 13 that were detected, all short term (24 hour) maximum levels or long term (annual) average levels from all of the five residential monitoring locations were below or well below the corresponding health-based air quality guideline value.

Overall, of the chemicals that were detected during this air monitoring program, including the 15 priority pollutants, none were found to be above its corresponding short term or long term air quality guideline value.

This confirms that emissions from the Dandenong South industrial 2 zone and Lyndhurst prescribed waste landfill are not significantly affecting the quality of the air environment in the local residential areas of Bangholme, Lynbrook, Hampton Park, Doveton or Dandenong South.

All measured air levels are low, therefore also very unlikely to be associated with any short term or long term health effects in the community.

How to interpret the results table

Pollutants have been ordered in Table 1 by the maximum values recorded during the monitoring period. The results from each site can be compared against the guidelines in the final four columns on the right hand side. Results at all sites were below the relevant guidelines set to protect human health.

Also note that in Table 1, 'bdl' (below detectable limit) is reported as the average for some pollutants even when a maximum value has been recorded. This is because of the convention used in calculating the average value (ie if a pollutant is not detected it is assigned a value of half the detection limit).

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Table 1: Dandenong South air monitoring results 27 April 2011 – 3 May 2012

Compund name	Site 1		Site 2		Site 3		Site 4		Site 5		Guidelines (ppb)		Guideline Reference	
	Avg ppb	Max ppb	Avg ppb	Max ppb	Avg ppb	Max ppb	Avg ppb	Max ppb	Avg ppb	Max ppb	24 Hour	Annual	24 Hour	Annual
Ethanol	4.3	20.0	4.2	47.6	3.8	11.5	4.9	26.0	5.4	32.3	9,500*	3,715,000	Ontario	ATSDR
Acetone	4.3	20.0	3.2	20.0	3.0	15.9	2.9	11.8	3.3	18.4	4,752	13,000	Ontario	ATSDR
Toluene	1.2	5.4	1.5	14.4	1.2	5.3	1.5	5.0	1.8	7.1	1,000	100	NEPM	NEPM
Vinyl acetate	bdl	3.6	bdl	5.4	bdl	2.4	bdl	2.3	bdl	6.4	N/A	10	N/A	ATSDR
Methyl butyl ketone	bdl	6.3	bdl	0.7	bdl	1.3	bdl	2.9	bdl	bdl	10	1.0	TCEQ	TCEQ
Methyl isobutyl ketone	bdl	3.7	bdl	1.0	bdl	0.9	bdl	2.8	bdl	0.8	278	50	Ontario	TCEQ
m- & p-Xylene	0.6	4.1	0.7	2.5	0.6	3.2	0.7	4.2	0.9	3.6	250	200	NEPM	NEPM
Benzene	bdl	3.3	bdl	1.1	bdl	1.0	bdl	1.2	bdl	1.3	N/A	3.0	N/A	NEPM
Methyl ethyl ketone	0.6	2.7	0.5	3.0	0.5	2.9	0.5	1.6	0.6	2.2	322	200	Ontario	TCEQ
Dichloromethane	bdl	2.8	bdl	2.3	bdl	1.6	bdl	1.5	bdl	1.1	60	300	Ontario	ATSDR
Heptane	bdl	0.6	bdl	2.5	bdl	bdl	bdl	1.6	bdl	0.6	2,551	N/A	Ontario	N/A
Carbon disulfide	bdl	0.9	bdl	bdl	bdl	bdl	bdl	2.4	bdl	1.8	N/A	300	N/A	ATSDR
Methyl methacrylate	bdl	2.4	bdl	bdl	bdl	bdl	bdl	0.6	bdl	bdl	200	N/A	Ontario	N/A
Isopropyl Alcohol	0.6	2.3	bdl	1.2	bdl	1.6	bdl	1.8	0.9	2.9	2,822	N/A	Ontario	N/A
Acrolein	bdl	1.9	bdl	2.1	bdl	2.7	bdl	1.6	bdl	2.3	3.0	N/A	ATSDR	N/A
Chloromethane	0.6	1.5	0.6	0.9	0.6	1.3	0.7	1.1	0.6	1.2	147	50	Ontario	ATSDR
Ethyl acetate	bdl	0.8	bdl	0.7	bdl	0.6	bdl	0.7	bdl	1.9	4,000	400	TCEQ	TCEQ
o-Xylene	bdl	0.9	bdl	0.9	bdl	0.9	bdl	0.8	bdl	1.3	250	200	NEPM	NEPM
1,2,4- Trimethylbenzene	bdl	0.9	bdl	0.9	bdl	1.1	bdl	1.3	bdl	1.4	43	25	Ontario	TCEQ
1,3,5- Trimethylbenzene	bdl	1.0	bdl	1.0	bdl	1.0	bdl	1.0	bdl	1.3	43	25	Ontario	TCEQ
1,4-Dioxane	bdl	0.9	bdl	1.1	bdl	bdl	bdl	1.3	bdl	bdl	923	1,000	Ontario	ATSDR
Hexane	bdl	0.6	bdl	0.9	bdl	0.6	bdl	0.8	bdl	0.9	1,800	600	TCEQ	ATSDR
Ethylbenzene	bdl	0.6	bdl	0.6	bdl	0.6	bdl	0.6	bdl	0.9	5,000	60	ATSDR	ATSDR
Styrene	bdl	2.1	bdl	2.7	bdl	1.6	0.5	3.8	0.5	5.6	89	200	Ontario	ATSDR
Cyclohexane	bdl	0.6	bdl	1.8	bdl	bdl	bdl	0.5	bdl	0.7	1,684	100	Ontario	TCEQ
Dichloro-difluoromethane	bdl	0.7	bdl	0.6	bdl	0.7	bdl	0.7	bdl	0.7	96,063	1,000	TCEQ	TCEQ
Naphthalene	bdl	1.4	bdl	1.1	bdl	1.4	bdl	1.9	bdl	1.6	4.0	0.7	Ontario	ATSDR

Key: bdl – below detectable limit (0.5 ppb), Avg - 12 month average, Max - Maximum concengtration, N/A – no appropriate standard, * - 1 hour guideline

Table 2: Compounds not detected during air monitoring at Dandenong South

Compund name				
1,1,1-Trichloroethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	Bromomethane	Hexachlorobutadiene
1,1-Dichloroethane	1,2-Dichloroethane	cis-1,3-dichloropropene	Carbon tetrachloride	Methyl tert-butyl ether
1,1-Dichloroethylene	cis-1,2-Dichloroethylene	trans-1,3-dichloropropene	Chlorobenzene	Tetrachloroethylene
1,1,2-Trichloro-1,2,2-trifluoroethane	trans-1,2-Dichloroethylene	1,4-Dichlorobenzene	Chloroethane	Tetrahydrofuran
1,1,2-Trichloroethane	1,2-Dichloropropane	4-Ethyltoluene	Chloroform	Trichloroethylene
1,1,2,2-Tetrachloroethane	1,2,4-Trichlorobenzene	Bromodichloromethane	Dibromochloromethane	Trichlorofluoromethane
1,2-Dibromoethane	1,3-Butadiene	Bromoform	Dichlorotetrafluoroethane	Vinyl chloride