



COMMUNITY INFORMATION

TULLAMARINE LANDFILL COMMUNITY AIR MONITORING PROGRAM – REPORT ONE

June 2011

BACKGROUND

In February 2011 EPA initiated a community air monitoring program in the vicinity of the closed Tullamarine Landfill. The monitoring is being undertaken to address community concerns about potential health effects arising from exposure to pollutants coming from the landfill and will be reviewed at the end of 12 months.

Monitoring is occurring at four sites within the local residential area. A further site is being located between the airport and the landfill. Monitoring data for this site will become available for the next report.

This report presents the results of the monitoring that has been undertaken from February 2011 to April 2011 at the residential locations. Sampling and analysis has been undertaken for a wide range of pollutants. Some of these pollutants (such as benzene) arise from a number of sources including motor vehicles as well as domestic and industrial sources, while others (such as vinyl chloride and other chlorinated solvents) are likely to be emitted from the landfill only and therefore act as a marker for the landfill gases.

METHODS USED TO MONITOR AIR QUALITY

Air samples were collected over a 24 hour period in canisters placed in the yards of four homes. The samples were analysed using a gas chromatograph - mass spectrometer (GC- mass spec). The GC-Mass Spec is used to identify what pollutants are present within the air samples taken within the vicinity of the Tullamarine Landfill and at what concentrations.

The air quality data collected has been compared against air quality objectives used by the EPA to assess the risk that these gases may pose to human health.

The air quality objectives are a set of concentrations, determined by scientific research, which have been found to protect the health of people when they may be in contact with the pollutant for 24 hours a day, seven days a week, over a 70 year lifetime. The objectives contain a margin of safety that ensures protection of people who may be more sensitive to exposure to the pollutants, such as people with existing illness, children and older adults.

The objectives used have been taken from two sources:

- The Air Toxics National Environment Protection Measure (Air Toxics NEPM); and
- For the other pollutants, the values have been obtained from the Texas Centre for Environmental Quality (TCEQ).

RESULTS

The results of the monitoring for all four sites are summarised in Table 1. The results are compared with national and international air quality standards.

The results show that for many substances the levels that were monitored were below detectable level. For all substances that were at measurable levels, they were all less than the relevant air quality standards.

For the substances that are widely spread in urban air, such as benzene, toluene and xylenes, the levels measured are comparable to those measured in other parts of Melbourne.

As part of the Tullamarine Landfill - Community Health and Environment Report research carried out by EPA in 2010, air dispersion modelling and a risk assessment was undertaken for three indicator pollutants:

- Benzene
- Trichlorethylene
- Vinyl Chloride

The monitoring of these substances has found that the concentrations of all these substances are low in the residential area. Vinyl chloride and trichloroethylene were below detectable levels in all of the samples. These monitoring results support the findings of the air modelling and risk assessment report released by EPA in February.

The monitoring has detected a range of chlorinated solvents at trace amounts. These substances were measured in the bores of the landfill in late 2010 and early 2011. The source of these substances is likely to be the landfill. The concentrations are very low and well below the air quality objectives. EPA will continue to work with TPI to explore options to further reduce emissions from the landfill.

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Table 1 : Tullamarine Landfill monitoring results February 2011 – April 2011

COMPOUND	SITE 1		SITE 2		SITE 3		SITE 4		GUIDELINE ppb
	Max ppb	Average ppb	Max ppb	Average ppb	Max ppb	Average ppb	Max ppb	Average ppb	
Trichloroethylene	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Vinyl chloride	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Benzene	0.5	0.4	0.5	0.4	0.6	0.6	0.5	0.5	3*
Toluene	1.5	1	12	2.5	1.9	1.8	1.7	1.4	1,000
Methane, chloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Formaldehyde	*	*	4.2	2.1	*	*	*	*	
Benzene, 1,2,4-trichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Benzene, 1,2,4-trimethyl	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Benzene, 1,2-dichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Xylene, m- & p-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	4.1	1.9	<i>bdl</i>	<i>bdl</i>	250
Xylene, o-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Methane, dichlorodifluoro	0.7	0.6	0.8	0.6	0.7	0.6	0.6	0.5	10,000
Benzene, 1,3,5-trimethyl-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Benzene, 1,3-dichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Benzene, 1,4-dichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Benzene, chloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Benzene, ethyl-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Buta-1,3-diene, 1,1,2,3,4,4-hexachloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Butadiene	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Carbon tetrachloride	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Chloroform	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethane, 1,1,1-trichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethane, 1,1,2,2-tetrachloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethane, 1,1,2-trichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethane, 1,1,2-trichloro- 1,2,2-trifluoro	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethane, 1,1-dichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethane, 1,2-dibromo-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethane, 1,2-dichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethane, dichlorotetrafluoro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethene, 1,1-dichloro-, (E)-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethene, 1,2-dichloro-, (E)-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Ethylene, tetrachloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Methane, bromo-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Methane, trichloromonofluoro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Methylene chloride	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Prop-1-ene, 1,3-dichloro-, (E)-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Prop-1-ene, 1,3-dichloro-, (Z)-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Propane, 1,2-dichloro-	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	
Styrene	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	<i>bdl</i>	

Key

bdl - below detectable limit
 * - not monitored at this site
 # - refers to annual average
 ppb - parts per billion