

11th February 2015

South Durban Community for Environmental Alliance (SDCEA)

Att: Bongani Mthembu

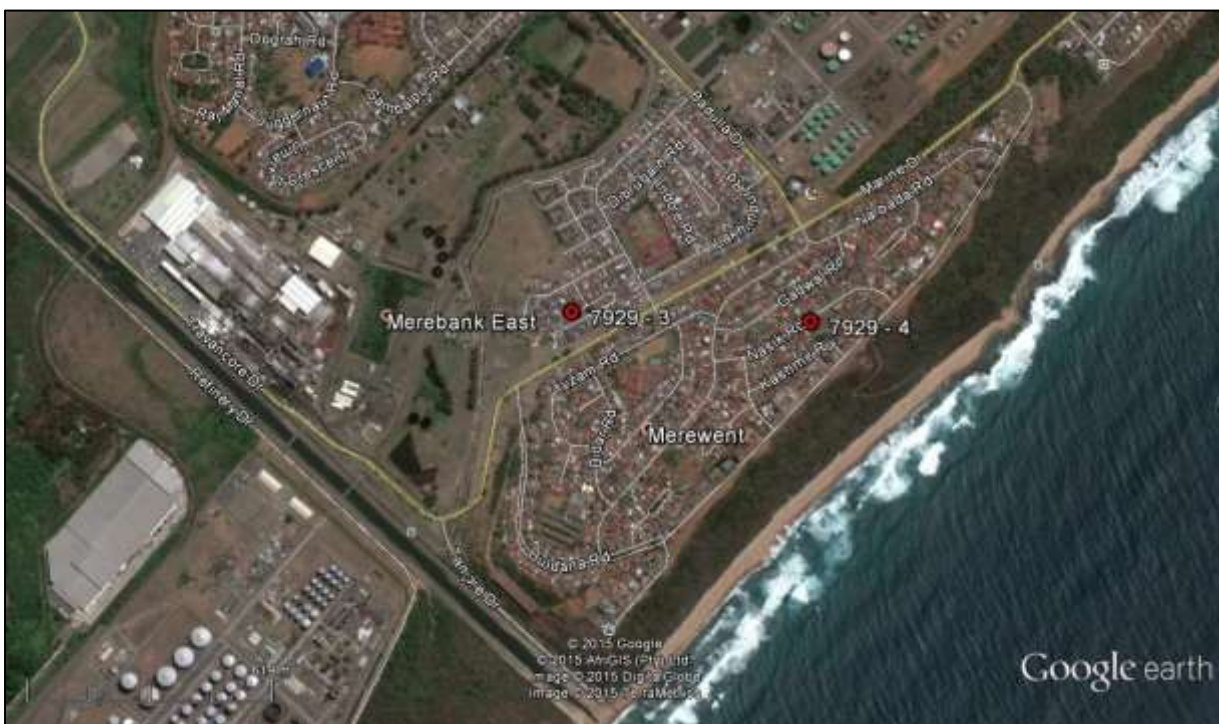
Ambient Air Quality Monitoring: Sylhet Place & Nasik Road

1. Introduction:

Ambient Air Quality monitoring was undertaken at a two residential properties, Sylhet Place and Nasik Road, located in Merewent from the 3rd December 2014 to the 13th January 2015. Air pollutants such as Sulphur Dioxide, Nitrogen Dioxide, Volatile Organic Compounds and Dust Fallout was monitored using passive Radiello samplers and ASTM 1739-98 (Reapproved 2004) Dust Fallout stands and buckets.

The Radiello samplers for SO₂, NO₂ and VOC's were deployed for a period of 7 days, whilst the DFO Unit was deployed for a period of 30 days.

The figure below indicates the locality of the residential properties in relation to its surrounding land use;



2. Results:

TABLE 1: RADIELLO SAMPLER'S RESULTS – SAMPLE 7929 - 3

Sample	Compound	Measured Concentration - $\mu\text{g}/\text{m}^3$	Ambient Air Quality Standard - $\mu\text{g}/\text{m}^3$	Evaluation	
7929 - 3	Sulphur Dioxide – SO ₂	25.67	125 $\mu\text{g}/\text{m}^3$ 24hr	Compliant Results	
	Nitrogen Dioxide – NOx	11.85	40 $\mu\text{g}/\text{m}^3$ 1 Year		
	Volatile Organic Compounds:				
	Benzene	0.37	5 $\mu\text{g}/\text{m}^3$ 1 Year	Compliant Result	
	1-Pentene	0.19	N / A	No set National Ambient Air Quality Standards.	
	n-Pentane	0.16			
	Isohexane	2.09			
	n-Hexane	1.64			
	MEK	0.08			
	Ethyl acetate	0.05			
	2-Methylhexane	0.88			
	3-Methylhexane	1.11			
	Isooctane	0.72			
	1-Heptene	0.05			
	n-Heptane	1.46			
	Propyl acetate	0.09			
	Toluene	4.98			
	n-Octane	0.89			
	Perchloroethylene	0.18			
	n-Butyl acetate	0.22			
	Ethyl benzene	1.45			
	Xylene	5.89			
	1-Nonene	0.09			
	n-Nonane	1.19			
	Propyl benzene	0.35			
	1,2,3-Trimethylbenzene	0.54			
	n-Decane	1.68			
	1,2,4-Trimethylbenzene	2.14			
d-limonene	0.26				
1,3,5-Trimethylbenzene	0.56				
Total VOC	29.31	-			

TABLE 1: RADIELLO SAMPLER'S RESULTS – SAMPLE 7929 – 4

Sample	Compound	Measured Concentration - $\mu\text{g}/\text{m}^3$	Ambient Air Quality Standard - $\mu\text{g}/\text{m}^3$	Evaluation
7929 - 4	Sulphur Dioxide – SO ₂	48.61	125 $\mu\text{g}/\text{m}^3$ 24hr	Compliant Results
	Nitrogen Dioxide – NO _x	10.31	40 $\mu\text{g}/\text{m}^3$ 1 Year	
	Volatile Organic Compounds:			
	Benzene	0.48	5 $\mu\text{g}/\text{m}^3$ 1 Year	Compliant Result
	1-Pentene	0.22	N / A	No set National Ambient Air Quality Standards.
	n-Pentane	0.34		
	Isohexane	1.13		
	n-Hexane	0.82		
	MEK	0.12		
	Ethyl acetate	0.09		
	2-Methylhexane	0.25		
	3-Methylhexane	0.33		
	Isooctane	0.25		
	1-Heptene	0.06		
	n-Heptane	0.45		
	Trichloroethylene	0.05		
	Methylmethacrylate	0.03		
	Propyl acetate	0.10		
	MIBK	0.09		
	Toluene	3.96		
	1-Octene	0.04		
	n-Octane	0.22		
	Perchloroethylene	0.26		
n-Butyl acetate	0.18			
Ethyl benzene	0.76			
Xylene	3.08			
1-Nonene	0.08			

TABLE 1: RADIELLO SAMPLER'S RESULTS – SAMPLE 7929 – 4 (Continued...)

Sample	Compound	Measured Concentration - $\mu\text{g}/\text{m}^3$	Ambient Air Quality Standard - $\mu\text{g}/\text{m}^3$	Evaluation
	n-Nonane	0.60		
	Propyl benzene	0.17		
	1,2,3-Trimethylbenzene	0.26		
	n-Decane	1.29		
	1,2,4-Trimethylbenzene	1.18		
	d-limonene	0.26		
	1,3,5-Trimethylbenzene	0.36		
	Total VOC	17.51	-	

TABLE 2: DUST FALLOUT RESULTS

Sample	Location	GPS Coordinates	Residential Area ($\text{mg}/\text{m}^2/\text{Day}$)	Measured Concentration ($\text{mg}/\text{m}^2/\text{Day}$)
7929 - 3	Sylhet Place	29° 57' 35.71" S 30° 58' 36.40" E	D < 600	408
7929 - 4	Nasik Road	29° 57' 34.89" S 30° 58' 58.89" E	D < 600	216

STANDARD LIMITS APPLIED

TABLE 3: NATIONAL DUST CONTROL REGULATIONS LIMITS

1	2	3	4
Level	Dustfall rate, D ($\text{mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$, 30-d average)	Averaging period	Permitted frequency of exceeding dustfall rate
Residential Area	D < 600	30 days	Two within any year, no two sequential months.
Non-residential Area	600 < D < 1200	30 days	Two within any year, not sequential months.

Source: National Dust Control Regulations, Government Gazette 36974 dated 1 November 2013

3. Evaluations

Radiello diffusive samplers deployed for Sulphur Dioxide (SO₂) and Nitrogen Dioxide (NO₂) returned **compliant** results when compared to the National Ambient Air Quality Standards.

The Radiello diffusive sampler deployed for Volatile Organic Compounds (VOCs) returned a result below the National Ambient Air Quality Standard for Benzene, i.e. compliant. Low contaminant concentrations were obtained for Benzene at both sampling locations.

For all other VOCs, no set National Ambient Air Quality Standards are available to which the results can be compared. Future monitoring results could be used to establish a trend in concentrations.

The results obtained from the DFO units also returned results well below the Residential Area rate of D < 600 mg/m²/Day.

4. Limitations

The results obtained were indicative of the conditions that prevailed during the sampling period. Changes in season, meteorology, production rate, process and other factors which affect contaminant generation and transmission, would cause variations in sample results. The archived DFO filters could be subjected to further analytical methods, on instruction from SDCEA or recommendation by Apex Environmental.

5. Certification Statement

This is to certify that the attached report has been compiled and issued under the authority, direction and the responsibility of an Apex Environmental, Occupational Hygienist.

Yours Sincerely,



Leon Pretorius
Environmental Manager
BSocSc Hons: Environmental Management (UKZN)
Registered Occupational Hygiene Technologist (SAIOH)