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Analysis of Smell Nearby Kurkumbh Industrial Area Tal – Daund

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ABSTRACT: Odor pollution in the air within Kurkumbh industrial area of Daund region of Pune district is studied, including its sources and distribution, the physical and chemical properties of odor, odor emission regulations in Maharashtra, odor control technologies as well as the state-of-the-art instrumentation and technology that are necessary to monitor odor, e.g., chemical sensors, olfactometry, gas chromatography, and electronic noses. In order to remove odorants from exhaust gas, aromatizing plants have been set up at various emission sources slowly. The main backbone of our proposed model is the odor sensor it consist two sensor i.e. ammonia and hydrogen sulfide sensor, display, 12 volt power supply etc. MQ136 gas sensor has high sensitivity to Hydrogen sulfide and MQ135 gas sensor has high sensitivity to ammonia, Low sensitivity for other combustible gas. It is with low cost and suitable for different application. It was observed that the most feasible option to carry out an odor survey in India is to use Field Investigation Method. Applied field investigation method was modified to fit India's need to measure different odor intensities based on the experience that clearly recognizable odor is observed as an annoyance. It consists of a sensor which is used to detect the presence of gases namely methane and hydrogen sulfide. the sensors are also used to monitor them regularly for a better health.

KEYWORDS: Odor, Instrumentation, Sensitivity, Olfactometry, Arduino, Sensor.

I. INTRODUCTION

When emissions comprising odorants are free to the atmosphere they can have an impact on the environment. Although under some circumstances this could include an impact on the ecosystem or on human health that would be a factor of the chemical environment (e.g. toxicity) of the relief rather than its odorous nature. By convention, the term 'odor impact' is restricted to the negative appraisal by a human receptor of the odor exposure. This assessment, taking place over a matter of seconds or minutes, involves many complex spiritual and socio-economic factors. Once exposure to odor has occurred, the process can lead to annoyance, nuisance and possibly complaints.

The issue of odors is very complex because odor, which is the sensation that is caused by a Complex mixture of odorants, is very subjective and therefore difficult to measure. Various Measurement techniques, such as gas chromatography or open-path Fourier transform infrared spectroscopy, have been developed to measure odor; however, such instruments measure only the concentrations of different odorants, which are then compared to odor threshold values, developed using human odor panels. Thus, to date, the greatest instrument for measuring odor is stagnant the human nose. Some individuals have far more sensitive noses and therefore will detect an odor at much lower concentrations than others. In addition, one person may find an odor to be unpleasant (e.g., burning coffee or malt from a brewery) while another may not. With growing population, industrialization and urbanization, the odor problem has been assuming objectionable proportion. Urbanization without proper sanitation facilities is a major cause of odor problem. Rapidly growing industrialization has aggravated the problem through odorous industrial operations. Undesirable odor contributes to air quality concerns and affect human lifestyles. Odor is undoubtedly the most complex of all the air pollution problems.

II. RELATED WORK

Prior to the field work, available data related to odor within Kurkumbh be collected from Kurkumbh Environment Protection C6-OP. Society Ltd. And Regional Officer -Pune MPCB and Sub-Regional Officer-Pune-I MPCB. Beside to

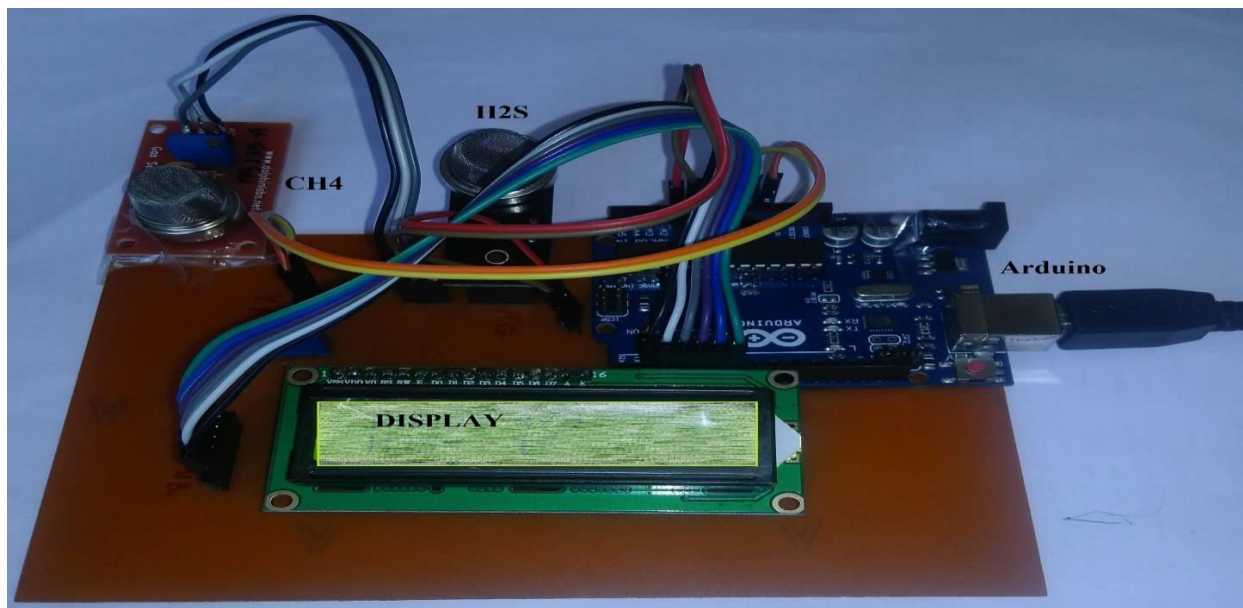


these a personal interaction was made with Kurkumbh Environment Protection C6-OP. Society Ltd. In order to preliminary ensure the availability of the basic data for study. It was planned to collect qualitative information through discussion with local experts and doctors which are living in Kurkumbh. Identifying and quantifying all the sources of odor and their compound in the study area. at present this data is recorded only at the Kurkumbh industrial area. This data might be useful to evaluate the compound present in maximum in that area. Beside to the records of the production of odor emission sources it is also important to have records at the point of stack or chimney. Also pattern of emission odors gas from chimney or stack. It is important to measure the metrological data (wind speed, temperature, humidity etc.) required for the measurement of intensity of odors compound i.e. hydrogen sulfide and Methane. Random field survey has been conducted within Kurkumbh industrial area to collect the qualitative data of concentration of odor present at that area and also identify the effect of odor on the living people. For the analysis of odor select different location in the Kurkumbh. Select total nine location surrounding the Kurkumbh industrial area and measure the intensity of odors compound of Methane and hydrogen sulfide at that location for whole day hourly at different temperature, wind speed, humidity in volt and it is converted into part per million (ppm). This intensity is compared to the standard given by the Maharashtra pollution central board (MPCB), OSHA and identifies the variation of intensity of odor.

III. METHODOLOGY

In our study Arduino uno based odor sensory measurement system is used for measurement of intensity of odor. In Kurkumbh industrial area numbers of odour compounds are emitted from different industries i.e. Methane, mercaptant, hydrogen sulfide, carbon dioxide, nitrogen etc. This methodology was developed based on existing theoretical framework on evaluation of odor, covering the measurement of gases (H₂S and NH₄), olfactory perception and assessment of climate conditions at the time of measurement. The methodology was validated by evaluating odor at 9 different points (in areas near the pharmaceutical industries) in the Kurkumbh near Daund district Pune chemical analysis were applied for detection of odors in this work, and the methodology applied was olfactory evaluation with the aid of a device for measuring gases Quantitative measurements of the gases H₂S and NH₄ were carried out using the equipment portable gas detector (measurement of H₂S and NH₄) which has a detection limit of H₂S and NH₄ ranging from 0 to 300 ppm. The temperature and relative humidity were determined from metrological data and the wind direction was determined by using Pavanreka wind rose software. The quantitative determination of the gases was performed on a 5-minute period.

In the sensory method use arduino uno based gas measurement system it consist two sensor (Methane (CH₄) MQ136 and hydrogen sulfide (H₂S) MQ135 sensor), display (16x2) and power 5 volts.



Arduino uno based gas measurement system

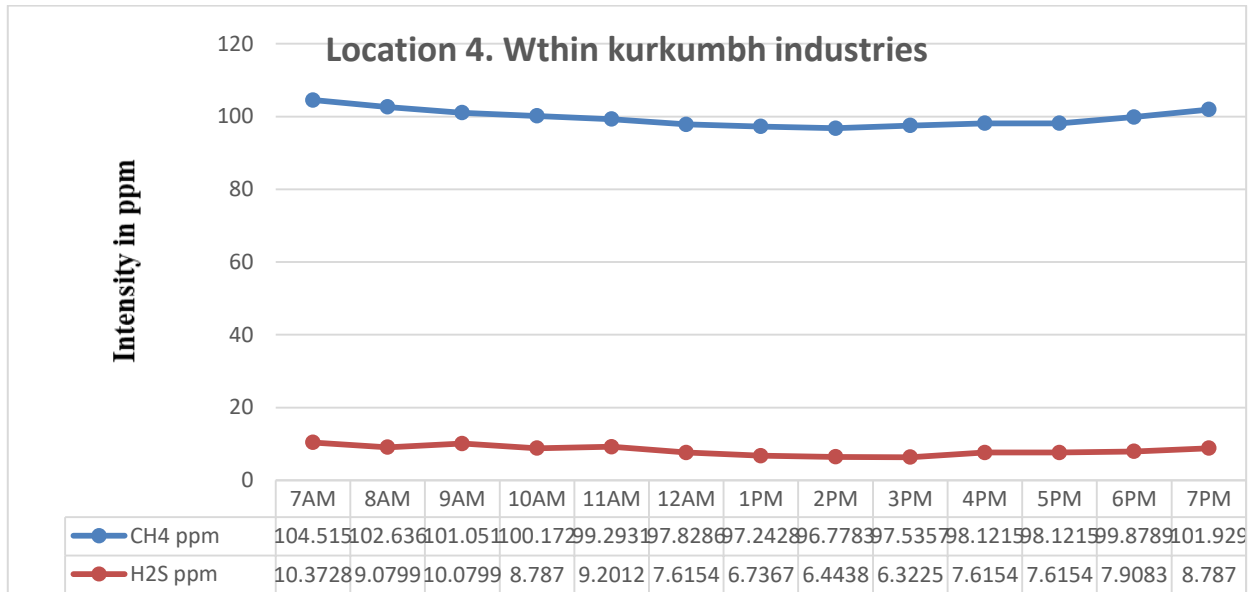


IV. EXPERIMENTAL RESULTS

For the analysis of odor select different location in the Kurkumbh. Select total nine location surrounding the Kurkumbh industrial area and measure the intensity of odors compound of Methane and hydrogen sulfide at that location for whole day hourly at different temperature, wind speed, humidity in volt and it is converted into part per million (ppm). This intensity is compared to the standard given by the Maharashtra pollution central board (MPCB), OSHA and identifies the variation of intensity of odor. The data sheet of the collected intensity of odors compounds i.e. hydrogen sulfide and Methane is given below.

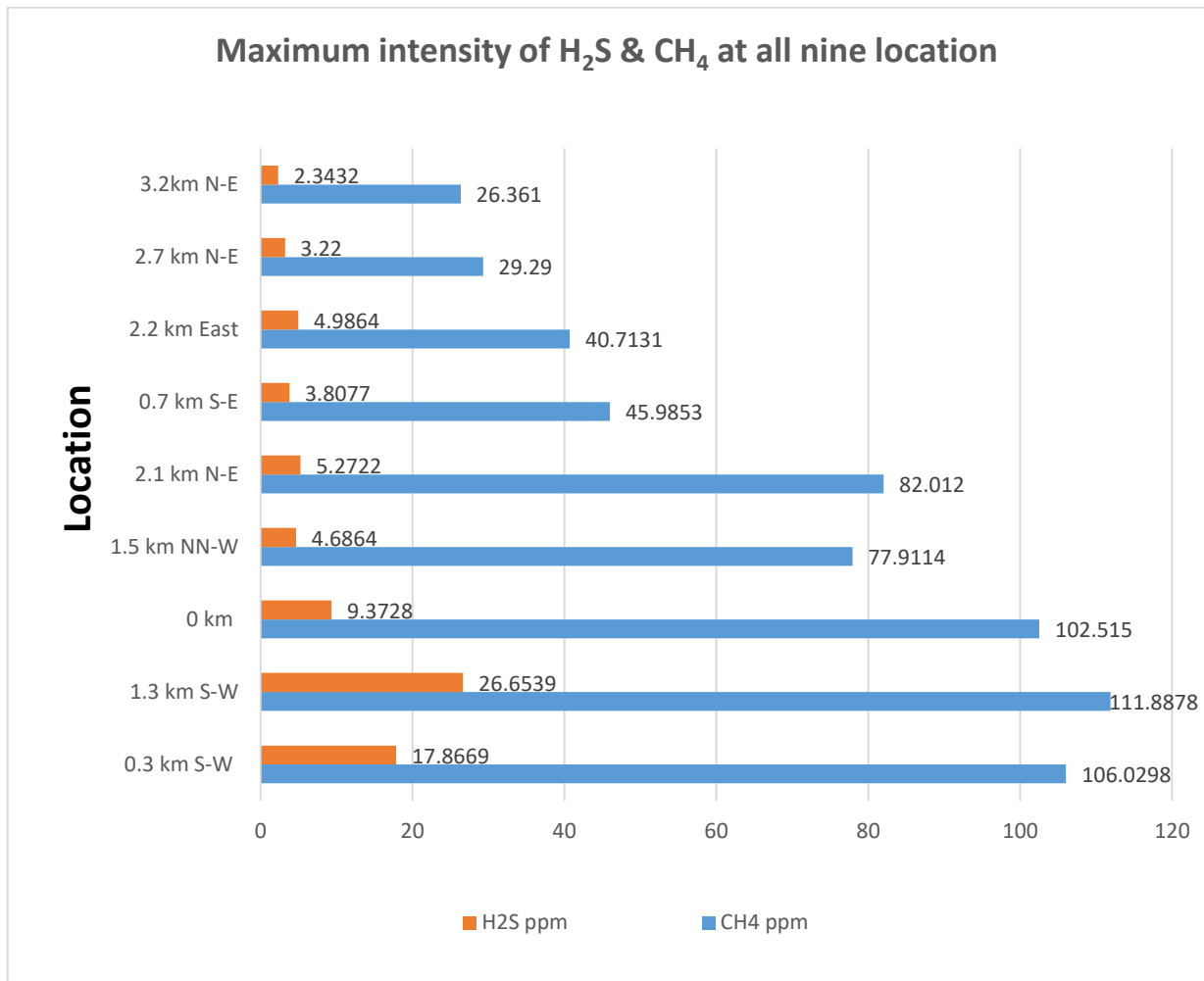
Observation within Kurkumbh industries

Time	Methane gas		Remark	Hydrogen sulphide gas		Remark
	dB	ppm		dB	ppm	
		(dB/1024)*300			(dB/1024)*300	
7	350	102.515	Throat and mucous membranes. Mild eye, nose, and throat irritation	32	9.3728	Prolonged exposure may cause nausea, tearing of the eyes
8	347	101.6363		31	9.0799	
9	345	101.0505		31	9.0799	
10	342	100.1718		30	8.787	
11	339	99.2931		28	8.2012	
12	334	97.8286		26	7.6154	
1	332	97.2428		23	6.7367	
2	327	95.7783		22	6.4438	
3	333	97.5357		25	7.3225	
4	335	98.1215		26	7.6154	
5	335	98.1215		26	7.6154	
6	341	99.8789		27	7.9083	
7	348	101.9292		30	8.787	



Observe the all nine location reading hourly and pick up the maximum intensity of every location and summarised here.

Location from midc	CH ₄ ppm	H ₂ S ppm
0.3 km S-W	106.0298	17.8669
1.3 km S-W	111.8878	26.6539
0 km	102.515	9.3728
1.5 km NN-W	77.9114	4.6864
2.1 km N-E	82.012	5.2722
0.7 km S-E	45.9853	3.8077
2.2 km East	40.7131	4.9864
2.7 km N-E	29.29	3.22
3.2km N-E	26.361	2.3432



V. CONCLUSION

In the present study, it was chiefly useful as complementary tool to Ardiuno based odour sensory systeme to record the daily variation of the odour concentration within Kurkumbh industrial area. Analytical measurements do not relate to odours as perceived by humans, however, which is of critical importance in considering odour nuisance. Sensory measurements are best suited to this role. In the present study, it was chiefly useful as complementary tool to Ardiuno based odour sensory systeme to record the daily variation of the odour concentration within Kurkumbh industrial area. We can decrease the odour intensity 10 to 20 % by planting the green belt around the odour producing area. The intensity of odour is permissible limit on one side of the trees belt and other side towards the industries these gasses are not in permissible limit.

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