

Bad Odour Removal from Hazardous Waste Management Site

1. Background

Hazardous waste management sites are source of emission of toxic gases, strong fumes, stringent chemicals and mixed odour. This Hazardous waste management facility is located near Ahmedabad, Gujarat.

This 50 meters * 20 meters campus provides facility for hazardous waste collection, segregation from nearby areas of Ahmedabad.

2. Challenge

Approximately known measurable 24 gases are released from this hazardous waste management facility. These gases caused adverse impact on the environment and occupational health of the workers.

Ammonia detection found to be 234 ppm. Acetaldehyde was 1655 ppm, however permissible limits of 8 hours exposure, as per factories Act 1948 is 100 ppm. Also, Ethyl acetate was 345 ppm, Methyl mercaptan was 143 ppm. Methyl Sulfide was 254 ppm which is in higher concentration and caused nuisance to the society and industrial area.

1.1 About Site

This waste management site collects daily 100 tonnes of hazardous waste, which consist of fluoride, chlorides, Sulphate and acid material from nearby industrial belt. Collected waste is mixture of substances from which 50 tonnes is segregated waste like metal, plastic, wood and 50 tonnes waste is disposed.

Table 1: Emissions at hazardous waste management facility

NO	Emissions in PPM	NO	Emission in PPM
1.	Ammonia	13.	Methyl sulfide
2.	Acetaldehyde	14.	N - butyraldehyde
3.	I - valerate / Butyl Butarate	15.	Propionaldehyde
4.	I - butanol/ Butanol -1	16.	N - valeraldehyde
5.	Methyl disulfide/ Di Methyl disulfide	17.	Propionic acid
6.	Ethyl acetate	18.	N - valerate
7.	Hydrogen sulphide	19.	Styrene
8.	N - butyric acid / iso butanol	20.	Tri methylamine
9.	I - butyl aldehyde	21.	Toluene
10.	I - valeraldehyde / iso valeraldehyde	22.	VOC
11.	Methyl isobutyl ketone	23.	Xylene
12.	Methyl mercaptan	24.	SO ₂

2.1 Photographic Presentation of site



3.1 Methodology for study

Amalgam Biotech took an initiative of testing concentration of such 24 gases emitted at this site. Our technical partner was well equipped for on-site testing. This testing was witnessed in presence of Mr Rajesh Narayan, Business Development Manager, Amalgam Biotech, in Nov 2022

3.2 Observa on

Very stringent, strong odour found during 1st monitoring for all 24 gases. Propionic acid fumes concentra on was 950 ppm, Hydrogen sulphide concentra on was 504 ppm. Monitoring team was equipped with protec ve covering for safety & health aspects, as ini al odour concentra on was high and unacceptable.

4. Solu ons to the problem:

The bad odour molecules were engulfed by our odour control product 'OdoServe'. OdoServe was misted in the hazardous waste facility for 3 hours intermi ntly which proved effec ve. A er use of odoserve, for the 1st me and 2nd me, percentage reduc on (%) achieved was huge as observed in the table below:

Table 2 : Results of before and a er OdoServe - Odour control product

SR.NO	Name	UNIT	Before use of odour control Product	After use of OdoServe-odour control Product 1st time	% Reduction-1st	After use of O doS e rve odour control Product- 2nd time	% Reduction-2nd
1.	Am m oni a	ppm	234.0	36.2	84.5	34.5	85.3
2.	Acetaldehyde	ppm	1655.5	30.5	98.2	38.2	97.7
3.	I - valerate / Butyl Butarate	ppm	15.4	12.1	21.4	8.2	46.8
4.	I - butanol / Butanol -1	ppm	178.7	36.6	79.5	31.0	82.7
5.	Methyl disulfide / Di Methyl Disulfide	ppm	0.9	1.2	-33.3	1.2	-33.3
6.	Ethyl acetate	ppm	345.0	50.5	85.4	19.8	94.3
7.	Hydrogen sulphide	ppm	504.5	29.4	94.2	36.1	92.8
8.	N - butyric acid / Iso Butanol	ppm	334.0	28.1	91.6	15.9	95.2
9.	I - butyl aldehyde	ppm	221.3	9.1	95.9	4.0	98.2
10.	I - valeraldehyde / Iso Valeraldehyde	ppm	343.5	23.3	93.2	3.9	98.9
11.	Methyl isobutyl ketone	ppm	231.5	7.1	96.9	14.6	93.7
12.	Methyl mercaptan	ppm	143.6	6.0	95.8	10.8	92.5
13.	Methyl Sulfide	ppm	254.9	4.9	98.1	10.7	95.8
14.	N - butyraldehyde	ppm	122.0	6.6	94.6	9.3	92.4
15.	Propi onal dehyde	ppm	680.9	18.3	97.3	17.9	97.4
16.	N - valeraldehyde / Pentanal	ppm	283.9	12.0	95.8	4.5	98.4
17.	Propionic acid	ppm	949.8	56.3	94.1	50.3	94.7
18.	N - valerate / Pentonic Acid	ppm	294.0	29.1	90.1	34.0	88.4
19.	Styrene	ppm	11 1.9	1.9	98.3	2.4	97.9
20.	Tri methylamine	ppm	31.1	2.0	93.6	2.9	90.7
21.	Toluene	ppm	53.7	3.4	93.7	2.1	96.1
22.	VOC	ppm	161.1	3.6	97.8	118.5	26.4
23.	Xylene / Xylene-m	ppm	161.1	4.5	97.2	1.1	99.3
24.	Sulphur Dioxide SO2	ppm	114.1	11.9	89.6	4.6	96.0

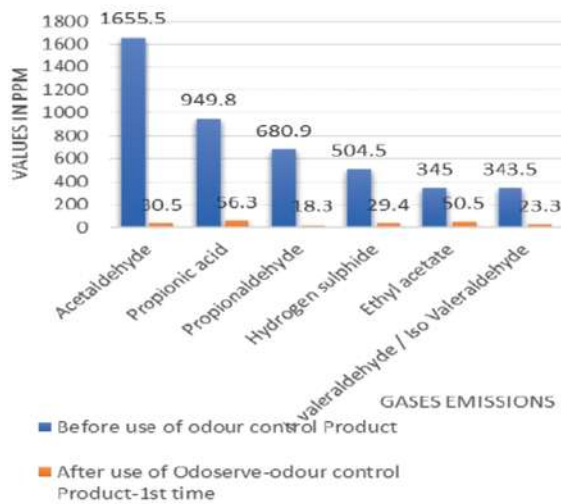
Highlight We have achieved

- 95% reduc on in Acetaldehyde, Iso Butanol, Methyl Sulfide, Sulphur Dioxide SO₂, Xylene were observed.
- Also, reduc on in concentra on value is below permissible limits for Ethyl acetate, Methyl isobutyl ketone, Toluene and ammonia.
- Considerable reduc on in concentra on of Methyl Sulfide that is 98%, Styrene also 98%, VOC 97% were achieved, which is favorable for toxicological, ecological & occupa onal health aspects.
- Methyl mercaptan has OSHA limit of 10 ppm & a er OdoServe mis ng it was detected to 6 ppm from 143 ppm on site!!
- Quan ty of odoserve dosed was 4 lit/day and 90% of all bad odour was gone!

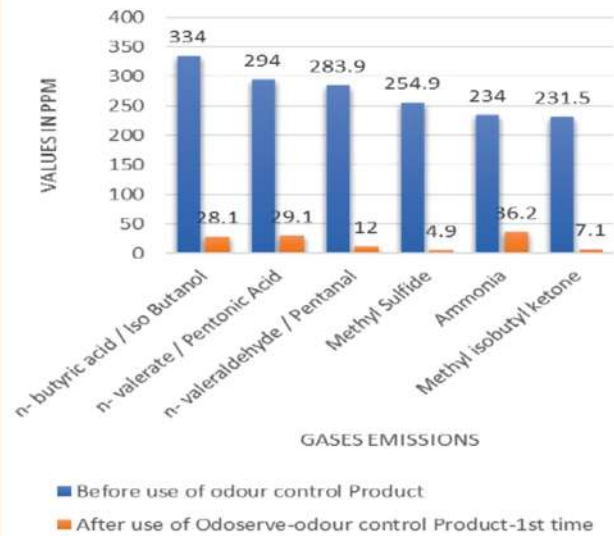


Graphical presenta on of OdoServe mis ng efficacy - before & a er:

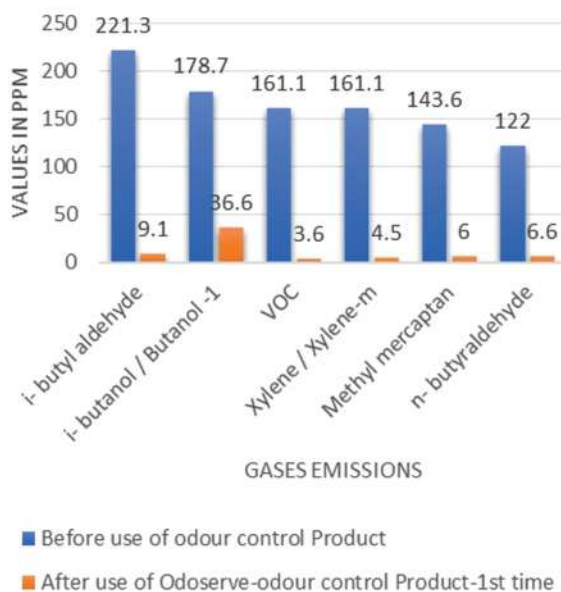
OdoServe efficacy : 1 - A



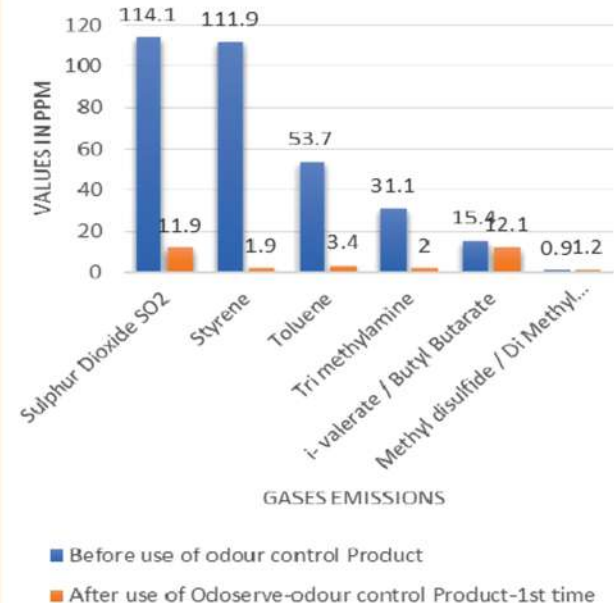
OdoServe efficacy : 1 - B



OdoServe efficacy : 1 - C

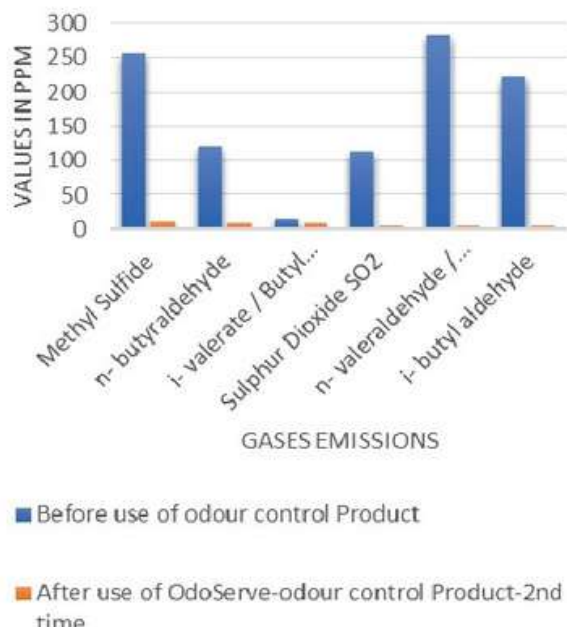


OdoServe efficacy : 1 - D

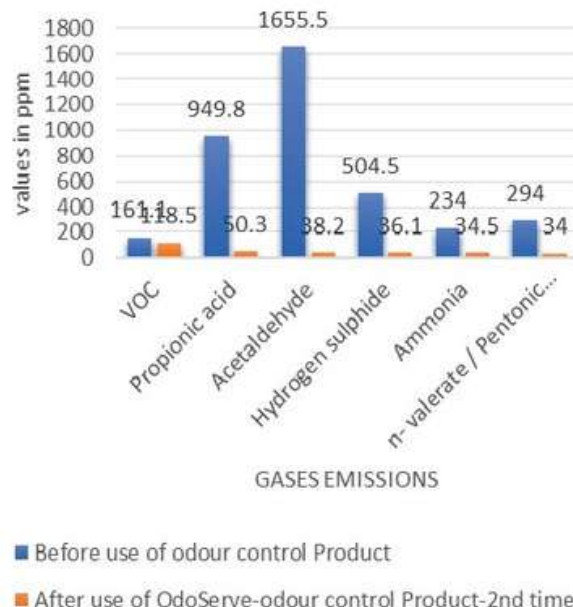


Graphical presentation of OdoServe misting Efficacy-Before & After:

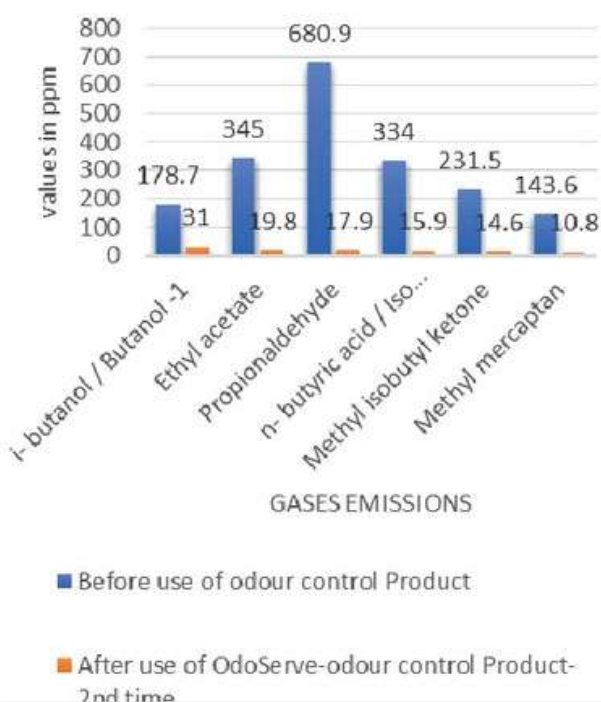
OdoServe efficacy : 2 - A



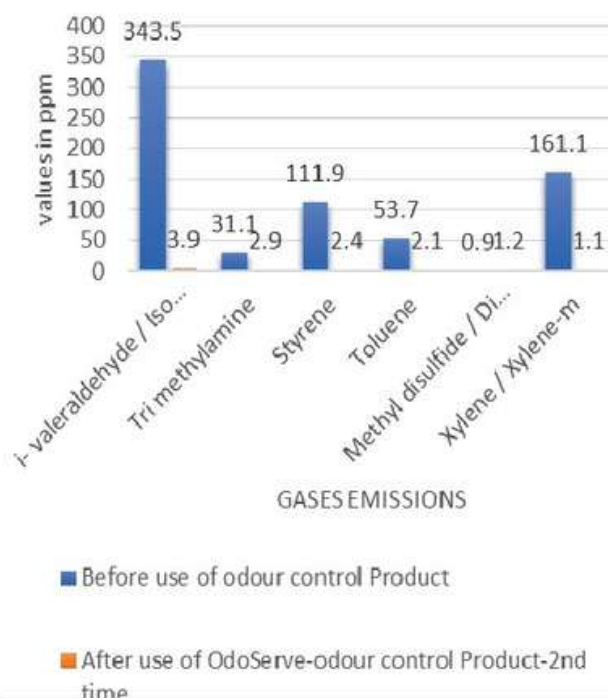
OdoServe efficacy : 2 - B



OdoServe efficacy : 2 - C



OdoServe efficacy : 2 - D



Executive summary

Wherever there are pharmaceutical, chemical, fertilizer, textile industries, hazardous waste is generated & different types of gaseous emissions are experienced at such sites. By using our product 'Odoserve', for such a short duration, we could achieve desirable results- like 90% reduction in emissions at this site.

Odoserve is an excellent odour removing solution!!

BactaServe® OdoServe® NutriServe®