

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
OA NO. 429 OF 2019**

IN THE MATTER OF:

RWA Society

Applicant

Versus

Govt. of NCT of Delhi

Respondent

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4.	Annexure A/3:: A true copy of the CPHEEO Manual.	
5.	Annexure A/4:: A true copy of the and Analysis Report of Sulphide before and after dosing of Ferric Chloride.	

Place:: New Delhi

Date:: -11-2021

Filed By

Sakshi Popli
(SakshiPopli)

Standing Counsel DJB

614, Patiala House Courts.

New Delhi-110001

Emailsakshipopli@gmail.com

Mobile No. 9811222660

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COMPLAINEE/STATUS REPORT ON BEHALF OF DELHI

JAL BOARD

To,

The Hon'ble the Chairperson, His Companion Justices and
Companion Members of the Hon'ble National Green Tribunal

MOST RESPECTFULLY SHOWETH:

1. That the present status cum action taken report is being filed by Delhi Jal Board in furtherance of the order dated 09-07-2021 passed by this Hon'ble Tribunal in above captioned matter.
2. That in compliance of directions passed by this honourable tribunal vide its order dated 9 July 2021, Delhi Jal Board after taking approval from the Competent Authority, has issued Work Order to Joint Venture of M/s Aaxis Nano

Technologies Pvt. Ltd. & M/s. Aquachem Enviro Engineers Pvt. Ltd. vide Work Order No. 24(2021-22) dated 19.08.2021 for the work of "Retrofitting of 45 MGD (Phase-IV) at Kondli, Delhi with Odour Control Units along with O&M of 5 years" (hereinafter referred to as Odour Control System).

3. That the Contract Agreement (CA) has been executed between Delhi Jal Board and JV of M/s. Aaxis Nano Technologies Pvt. Ltd & M/s. Aquachem Enviro Engineers Pvt. Ltd. vide CA No. 20(2021-22) dated 12.08.2021.
4. That as per the work order issued to the contractor, the said work has to be completed within five months with regard to Supply, Installation, Testing & Commissioning of Odour Control System and thus as per the terms and conditions of the work order the work of installation and commissioning will be completed by January 2022.
5. That it is pertinent to mention here that substantial civil work at the site has been completed by the contractor. A true copy of the photographs of the site is being annexed herewith and marked as Annexure A/1 (Colly.).
6. That it is further submitted that the odour control system which is to be installed is supposed to be imported from

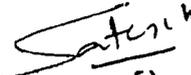
Netherlands, Europe as per the specification mentioned in the agreement. It is submitted that Purchase Order has been placed by the executing agency to the manufacturer of Odour Control System which is expected to be received at the site from the manufacturer by December, 2021. A true copy of the purchase order of Odour Control System is being annexed herewith and marked as Annexure A/2.

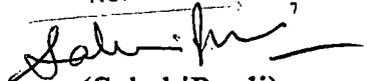
7. That the software for the purposes of online monitoring of Hydrogen Sulphide parameters as well as mobile application has been developed and is under testing stage and portable devices for H₂S monitoring has been procured by the contractor.
8. That it is pertinent to mention here that Delhi Jal board is carrying out round the clock dosing of ferric chloride, so as to curb the bad odour. It is relevant to submit here that the results of dosing have been encouraging and the Sulphide content has considerably reduced and are under permissible limits as mentioned in the CPHEEO manual. A true copy of the CPHEEO Manual and Analysis Report of Sulphide before and after dosing of Ferric Chloride is being annexed herewith and marked as Annexure/3 and A/4 respectively.

9. That it is most humbly submitted that after implementation of the aforestated dosing process and coverage done at the plant, respondent has not received any complaint from anyone including the applicant regarding the bad odour.

Dated:: 11-11-2021

THROUGH


RESPONDENT
S. C. VASHISHTH
Chief Engineer (SDW) N/W
DELHI JAL BOARD
WWTP Keshopur,
New Delhi-110018


(SakshiPopli)

Standing Counsel DJB

Annexure
A/1 (colly)



DANGER
CONSTRUCTION SITE
UNAUTHORISED PERSONS
KEEP OUT

Safety helmets and
protective footwear
must be worn in this area

**PROJECT SITE FOR INSTALLATION OF
ODOUR CONTROL UNIT FOR 45 MGD
STP-Kondli**

Axis Neenu Technologies Pvt. Ltd.
P. No. 20, Sector 28, Gurgaon, Haryana, India - 122009

CAUTION

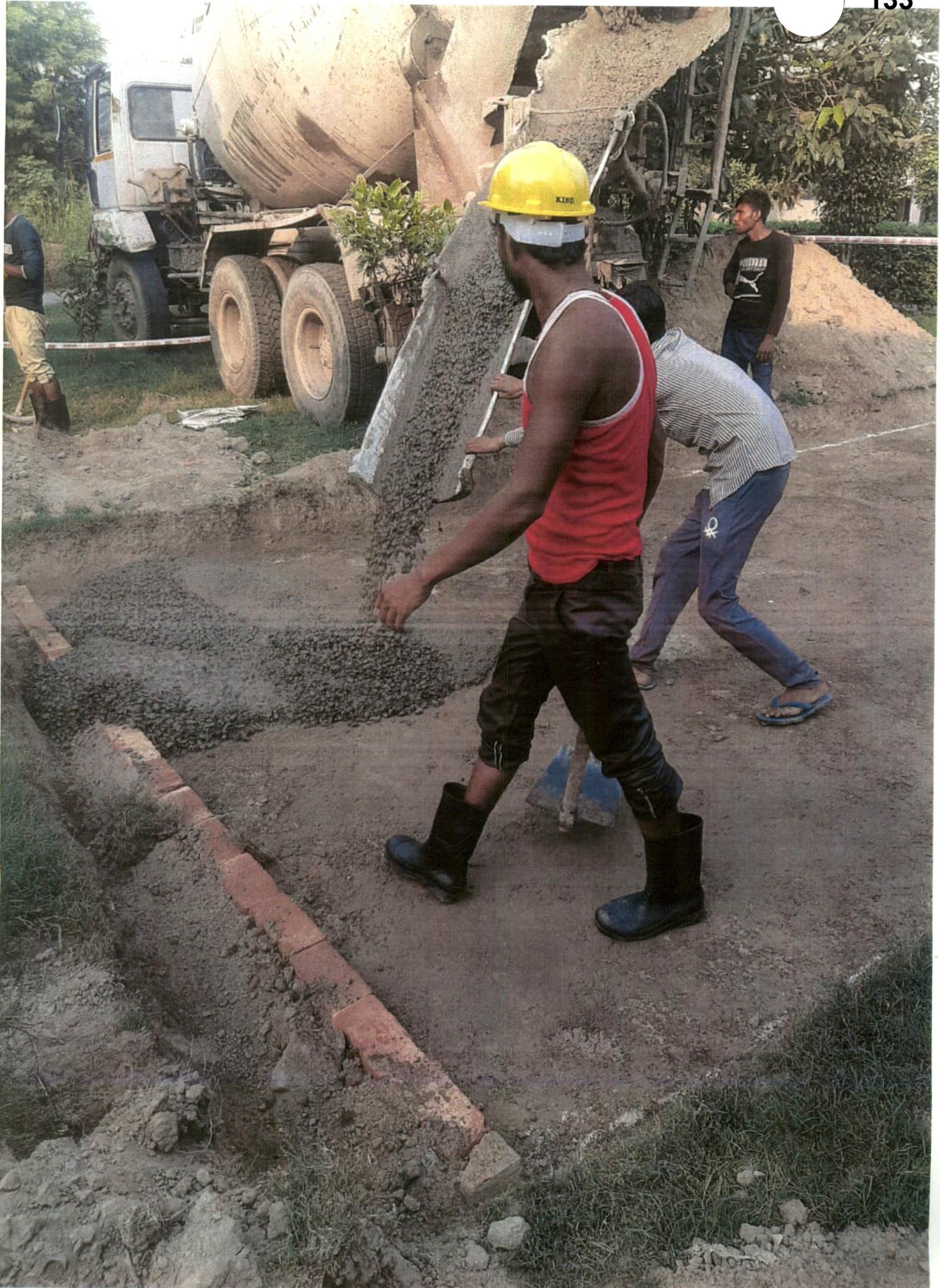
**CIVIL WORK IS UNDER PROGRESS
FOR
INSTALLATION OF ODOUR CONTROL
UNIT FOR 45 MGD STP-Kondli**

Axis Neenu Technologies Pvt. Ltd.
P. No. 20, Sector 28, Gurgaon, Haryana, India - 122009



















Civil Work In-Progress of OCUs

1. Porta Cabin Foundation



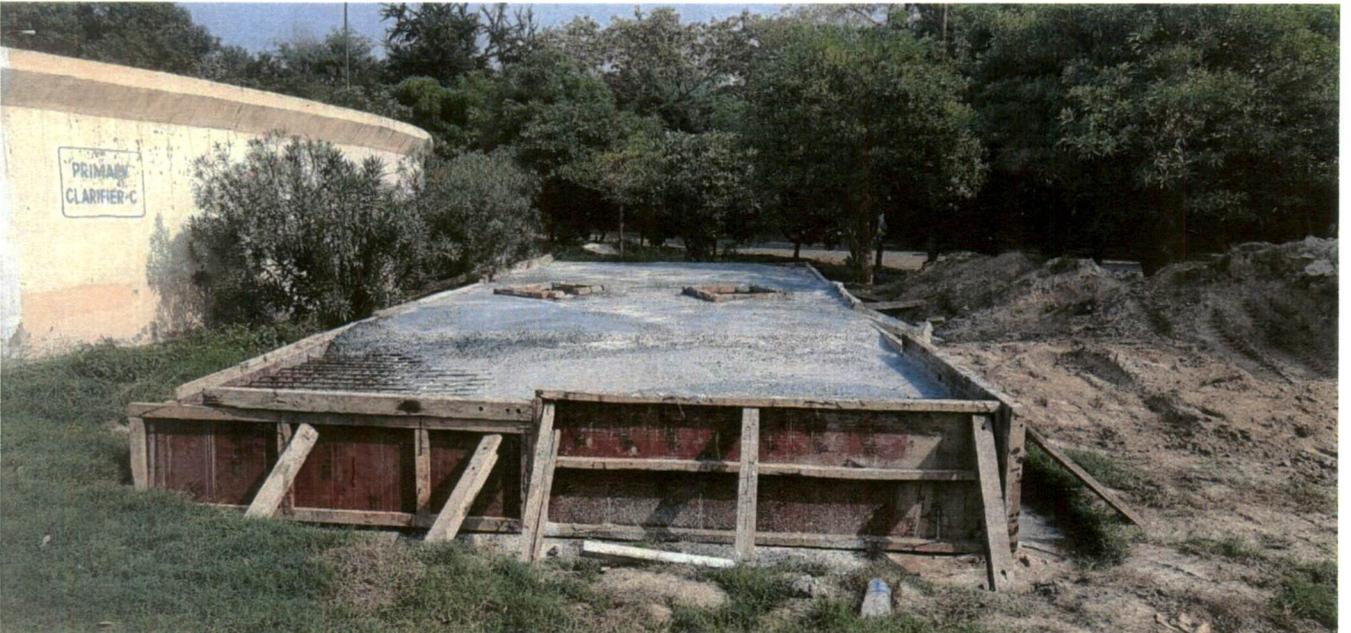
2. Civil Foundation of OCU – 1



3. Civil Foundation of OCU – 2



4. Civil Foundation of OCU – 3







Annexure A/R

**Aaxis Nano Technologies Pvt. Ltd.**

Plot No. B-46, Sector-59,
Industrial Area, Noida, U.P.-201301
Ph: +91-0120-4159238, +91-98218-90332
Email: info@aaxisnano.com
Website: www.aaxisnano.com

PURCHASE ORDER					
To PURE AIR SOLUTIONS, P.O. BOX 135, 8440, AC HEERENVEEN, THE NETHERLANDS		Purchase Order No.: 31			
		Date : 28-08-2021			
		Reference: 1900064 / A Dated 16-08-2021			
		Contact Person : Mr. Bart			
		Phone No.:			
Contact Person : Rita Malhotra		GST No.:09AALCA6200A1Z7			
Contact No.: 9216088369		Project : OCU1, 2, 3+4 WWTP Delhi			
Sr. No	Description	Units	Qty	Unit Price In Euro	Total Price In Euro
1.	<u>SULPHUS/ACTUS SYSTEM FOR ODOUR/ H2S CONTROL FOR OCU3+4 WWTP Delhi Project</u> All Specifications and features as per Delhi Jal Board Tender and annexure as below	SET	01	██████████	██████████
2.	<u>SULPHUS/ACTUS SYSTEM FOR ODOUR/ H2S CONTROL FOR OCU2 WWTP Delhi Project</u> All Specifications and features as per Delhi Jal Board Tender and annexure as below	SET	01	██████████	██████████
3.	<u>SULPHUS/ACTUS SYSTEM FOR ODOUR/ H2S CONTROL FOR OCU1 WWTP Delhi Project</u> All Specifications and features as per Delhi Jal Board Tender and annexure as below	SET	01	██████████	██████████

Design Specifications OCU 3 & 4:

Air flow(s):	Am3/h	T (°C)	RH (%)	H2S (ppm)	VOC's (ppm)	NH3
Parshall Flumes/Primary Sludge	2.190	30	60	50,0	0,00	0,0
Thickening Tanks	3.354	30	60	50,0	0,00	0,0
Total (mixed) airflow	5.543	30	60	50,0	0,00	0,0

Design Specifications OCU 2:

Air flow(s):	Am3/h	T (°C)	RH (%)	H2S (ppm)	VOC's (ppm)	NH3
Grid Chambers	3.672	30	60	50,0	0,00	0,0
Total (mixed) airflow	3.671	30	60	50,0	0,00	0,0

Design Specifications OCU 1:

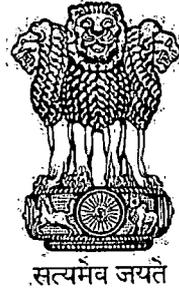
Air flow(s):	Am3/h	T (°C)	RH (%)	H2S (ppm)	VOC's (ppm)	NH3
Inlet & Screen Chambers	1.247	30	60	50,0	0,00	0,0
Total (mixed) airflow	1.246	30	61	50,0	0,00	0,0

Total Price – EURO- [REDACTED]

TERMS & CONDITIONS

1.	Price basis	FOB Netherland
2.	Taxes and Duties	Indian custom duty during custom clearance and taxes in Aaxis scope
3.	Packing and forwarding	Included

4.	Freight charges	Extra or by our Logistic
5.	Installation & Commissioning	Site Commissioning, site instruction and biological start-up Euro 850 per day exclusive Travel and Lodging
6.	Warranty/Guarantee	Warranty of the media is 20 years
7.	Delivery Period	Total delivery period 16 weeks from the date of purchase order (1.5 weeks for submission of design and detail drawings to consultant, 9.5 weeks for Production and 5 weeks for Sea Freight Transportation)
8.	Liquidated Charges	Not Applicable.
9.	Transit Insurance	In our scope
10	Terms of Payment (Letter of Credit or TT)	10% Advance after formal acceptance of our purchase order, 40% against submission of design, engineering documents, data sheets and drawings for the project and balance 50% against Proforma Invoice before dispatch of goods.
11	Documents to be submitted	Following documents shall be submitted by the supplier along with dispatch of goods. <ol style="list-style-type: none"> 1. Original Invoice 2. LR Copy 3. Warranty/Guarantee Certificate 4. Test Certificate
12	Mode of Dispatch	By Air/Sea – Will confirm later
13	General Note	Please mention our purchase order in all correspondence
14	Order Acceptance	Acknowledgement required
15	Billing And Delivery Address	AAXIS NANO TECHNOLOGIES PVT. LTD. PLOT NO. B-46, SECTOR 59 INDUSTRIAL AREA, NOIDA-201301
		
AAXIS NANO TECHNOLOGIES PVT. LTD.		



Annexure A/3

MANUAL ON SEWERAGE AND SEWAGE TREATMENT SYSTEMS

PART A: ENGINEERING - APPENDIX
THIRD EDITION - REVISED AND UPDATED

MINISTRY OF URBAN DEVELOPMENT, NEW DELHI
<http://moud.gov.in>

CENTRAL PUBLIC HEALTH AND
ENVIRONMENTAL ENGINEERING ORGANIZATION

IN COLLABORATION WITH



JAPAN INTERNATIONAL COOPERATION AGENCY

NOVEMBER 2013

APPENDIX A 5.1 ODOUR CONTROL

1 Introduction

Raw sewage must not be allowed to stagnate. If this occurs, anaerobic process sets in as shown in Figure 5.2. This in turn can generate Hydrogen Sulphide gas. It is this gas which causes foul odour problems because it smells like rotten egg. The need for control of this foul odour is the fact that this gas can be harmful to human beings. This chapter deals with the effects of this gas on human health, the locations where this gas can form and the technologies of its control.

2. Mechanism of its Entry and Effects on Human Beings

- The gas enters the body through eyes or mucous membrane of breathing organs.
- Blood seeps out from the capillaries in cavities of the lungs, causes pulmonary oedema, leading to breathing difficulties and death by suffocation.
- In sewer facilities, it is generated in rising mains with no oxygen supply and in inverted siphons, etc., where sludge is likely to accumulate easily.
- It is generated in grit chamber, pumping well, sedimentation basin, and sludge thickening tank in sewage treatment plants.
- Hydrogen sulphide generated in sewage and deposited sludge is sealed within and in the static condition, so it does not disperse to the atmosphere easily. However, when agitated, it disperses all at once to the atmosphere.

The relationship between its concentration and its toxic effect is shown in Table A5.1-1.

Table A5.1-1 Relationship between concentration of hydrogen sulphide and its toxic effects

onc. (ppm) of H ₂ S	Effects and reaction on organ by H ₂ S		
0.025	<u>Sense of odour</u> Sensitive persons can sense the odour (limit of sense of odour)		
0.3 3 to 5	Anybody can sense the odour Foul unpleasant odour of medium strength		
10		Permissible concentration (lower limit for irritation of the mucous membrane of the eye)	
20 to 30	Although bearable, after getting accustomed to the odour (olfactory fatigue), any higher concentration cannot be sensed.	<u>Breathing organs</u> Lowest limit for irritating the lungs	
50			<u>Eyes</u>
100 to 300	Olfactory nerve paralysis for 2 to 15 minutes; feels like unpleasant odour has reduced.	If exposed continuously for 8 to 48 hours, bronchitis, pneumonia, and death by suffocation due to pulmonary oedema	Conjunctivitis, itchiness, pain in the eyes, feeling

onc. (ppm) of H ₂ S	Effects and reaction on organ by H ₂ S		
170 to 300		Scorching pain in the mucous membrane of respiratory tract; if exposure is less than 1 hour (limit), serious symptoms may not occur	of sand in the eye, glare, bloodshot eyes and swelling, turbidity of cornea, corneal damage and separation, bending and haziness of field of vision, increase in pain due to light
350 to 400		Exposure for 1 hour or more may lead to loss of life	
600		Exposure for 30 minutes hour may lead to loss of life	
700	<u>Cerebral nerves</u> After excessive respiration for a short period, respiratory paralysis occurs immediately thereafter		
800 to 900	Loss of consciousness, respiratory arrest, death		
1,000	Swoon, respiratory arrest, death		
5,000	Instantaneous death		

Source: JSWA, 2003

3 Locations where the gas is formed

The factors causing foul odour are unnecessary sewage stagnation and anaerobic activity. The locations where these can occur are

- a) Sewers that are choked and not flowing,
- b) Sewage pumping station sumps where sewage is not pumped out then & there,
- c) Primary clarifiers, sludge thickeners, digesters and sludge drying beds in STPs.

Immediately on forming, the gas is however in dissolved form. When the sewage gets agitated like flowing through sewers, this gas is released into the air. At this stage, its foul odour is troublesome. Even though ammonia is also present in sewage, it does not cause any odour problem because it is present as ammonium bicarbonate salt: It is split into ammonia only during biological treatment and gets nitrified if additional oxygen is supplied. Even if it is not nitrified, its concentration is too low to cause a foul odour problem. There can be stray gases like methyl sulphide, dimethyl sulphide and methyl mercaptan, but their concentrations are usually negligible for any human discomfort.

4 Control Technologies

Odour control processes are as follows.

4.1 Odour Prevention

The objective is to reduce the number of locations and volume of odour-generating substances.

i) Sealing of locations emitting odour

Some of the methods to seal odour can be through using air-tight manhole cover, air-tight door, trap seal, air curtain.

ii) Anti-septic

In this method, the odour is controlled by restraining the decomposition of organic matter through use of sterilizer and maintaining aerobic condition through use of air and ozone.

iii) Cleaning

Debris tends to be accumulated around screen and grit removal facility and consideration is required during design to make cleaning of the structure easy.

4.2 Ventilation

Generated odour is ventilated and discharged to air by dilution and dispersion.

4.3 Deodorisation

There are many kind of deodorisation system. Optimal deodorisation system should be selected in consideration of air flow, constituents and intensity of nuisance odour, target of deodorisation, ambient environment, manageability of O&M, and economic efficiency. Consideration should be made whether central deodorisation or individual deodorisation system should be adopted in each STP or pumping stations.

4.4 Odour Enclosure

Providing a cover over the units, which produce odour, helps in containing the odour to be removed. The head room in such cases shall be a minimum 4.5 m as per the industrial safety requirements. The material of the cover can be synthetic types mounted on a funicular polygon. All materials and fasteners shall be non-corrodible. Some installations are shown in Figure A5.1-1.



(A) Figure A5.1-1 Covers over sewage structure — Flat type and Dome type (Yokohama City)

4.5 Deodorisation Processes

4.5.1 Aeration Oxidation Process (Activated Sludge Basins)

Principle

Odour-generating gas is fed into aeration tank where it is oxidized and decomposed by the action of activated sludge.

Target substances

Sulphur compound

Salient Features

Both capital and O&M costs are low. Blower needs mist filter and dust filter for protection and corrosion resistance.

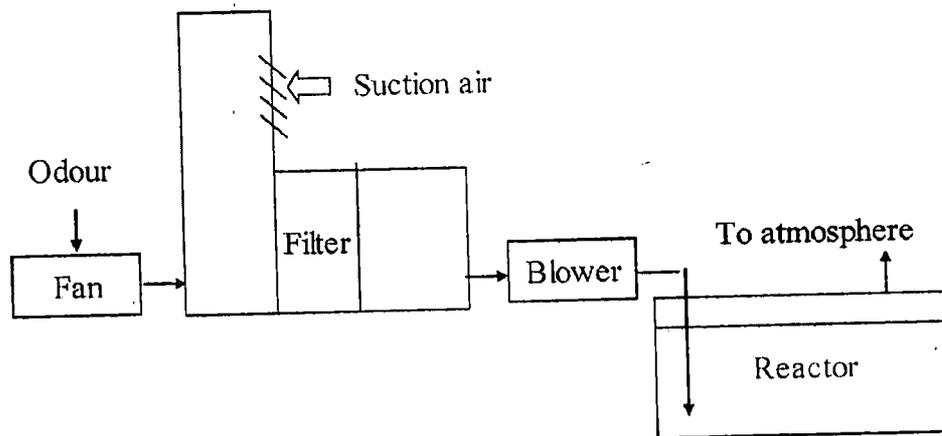


Figure A5.1-2 Schematic diagram of aeration oxidation process (activated sludge basins)

4.5.2 Soil Deodorisation System

i) Principle

Odour-generating substances are fed into soil where it is adsorbed, oxidized and decomposed by action of bacteria in soil.

Target substances

Organic substance, which is nutrient for bacteria

Salient Features

In this case, the capital cost is low but large footprint is required. Gradual consolidation of soil prevents permeability and discharging efficiency. Therefore, periodic maintenance of soil is required through ploughing and replacement.

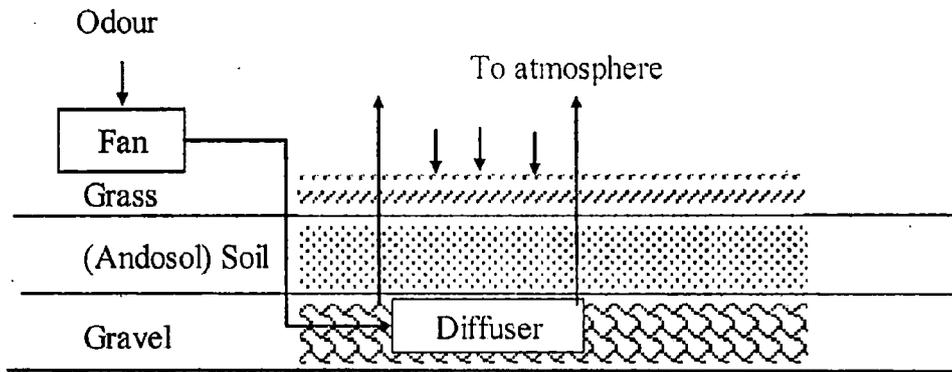


Figure A5.1-3 Schematic diagram of soil deodorisation system

4.5.3 Biofiltration

i) Principle

In this process, odour-generating substances fed to soil is adsorbed, oxidized and decomposed by action of bacteria.

ii) Target substances

Organic substance, which is nutrient for bacteria and hydrogen sulphide

iii) Salient Features

O&M cost is relatively low and footprint of equipment is small. The process is suitable for high strength of odour and acclimation period of bacteria is needed.

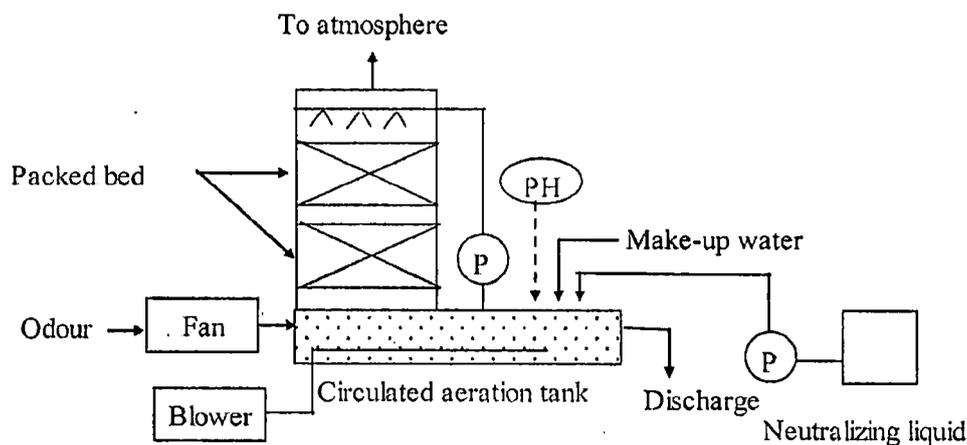


Figure A5.1-4 Schematic diagram of biofiltration

4.5.4 Water Scrubber Process

Principle

Odour is removed by contact of the odour-generating substances with water and dissolving odour.

Target substances

Ammonia, Amines and other water soluble substances

Salient Features

Both capital and O&M costs are low. This is generally used as the pre-treatment of following deodorisation process. When secondary treated wastewater is used as washing water, caution is needed because secondary treated water may emit odour.

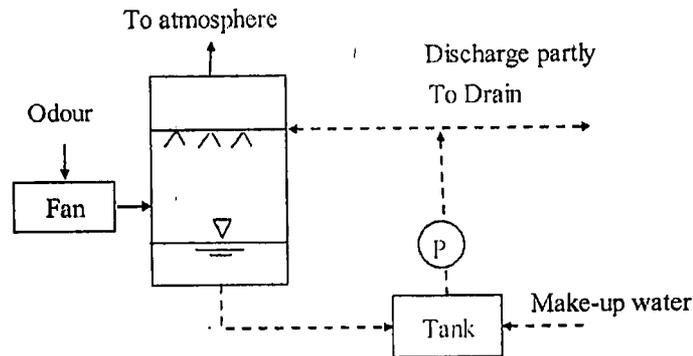


Figure A5.12-5 Schematic diagram of water scrubber process

4.5.5 Activated Carbon Process

i) Principle

Odour-generating substances are removed by adsorbing physically and chemically.

ii) Target substances

Hydrogen sulphide, Methyl sulphide, Ammonia, Trimethylamine

iii) Salient Features

Activated carbon is relatively expensive and characterised by high pressure loss. Periodically exchange or regeneration of activated carbon is necessary. Mist and dust in gas need to be removed. This system is suitable for low strength odour.

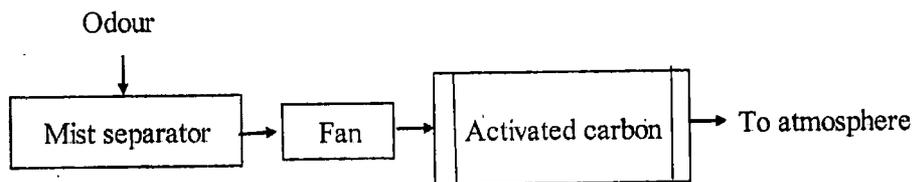


Figure A5.1-6 Schematic diagram of activated carbon process

4.5.6 Ion Exchange Resin

i) Principle

By passing odour-generating substance through ion exchange resin, odour-generating substances are removed by chemical adsorption of alkaline and acid substances and physical adsorption of neutral substances.

ii) Target substances

Almost all odour-generating substances

iii) Salient Features

Resin is relatively costly and pressure loss is large. Regeneration of resin is rather easy. Sometimes activated carbon process and ion exchange process are configured in series.

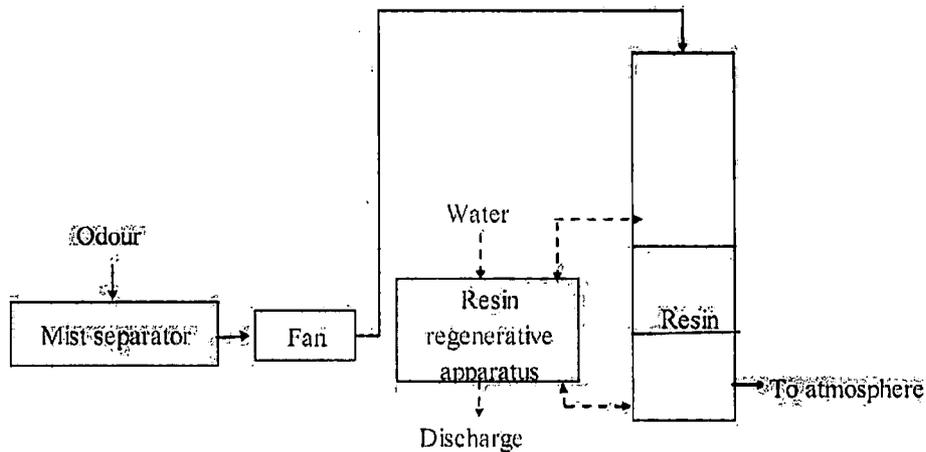


Figure A5.1-7 Schematic diagram of ion exchange resin

4.5.7 Chemical Oxidation Process

Principle

Odour-generating substances are removed by the oxidation action of oxidants such as sodium hypochlorite, and chlorine water.

Target substances

Oxidisable substances

Salient Features

In case if the exhausted gas contains chlorine, absorption equipment with alkaline solution is needed.

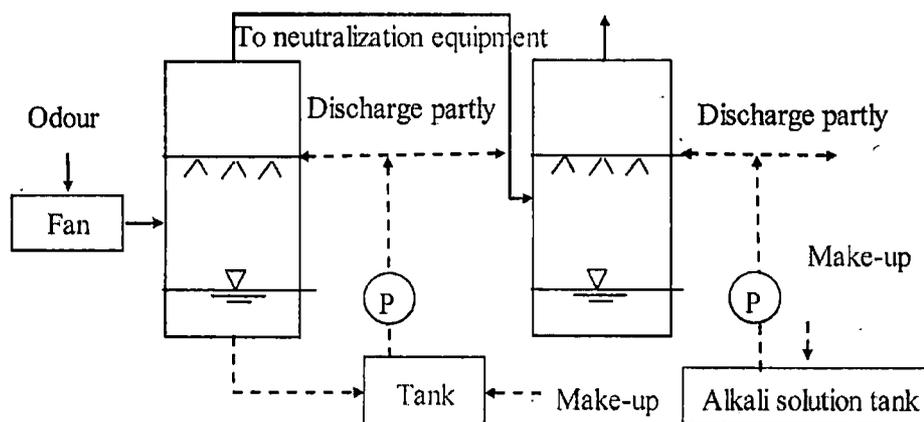


Figure A5.1-8 Schematic diagram of chemical oxidation process

4.5.8 Acid and Alkaline Scrubber Process

i) Principle

In acid scrubber process, odour-generating substances are kept in contact with hydrochloric acid or sulphuric acid, and are removed by neutralization reaction. In alkaline scrubber process, odour-generating substances are kept in contact with sodium hydroxide, and are removed by neutralization reaction.

ii) Target substances

Ammonia, Amines (acid scrubber process), Hydrogen sulphide; Methyl mercaptan (alkaline scrubber process)

iii) Salient Features

In this process, neutralization equipment is needed. Since there are many contact methods between chemical and odour-generating substances, close examination is needed in their selection. It is important to mention that pH of solvent influences the efficiency of deodorisation.

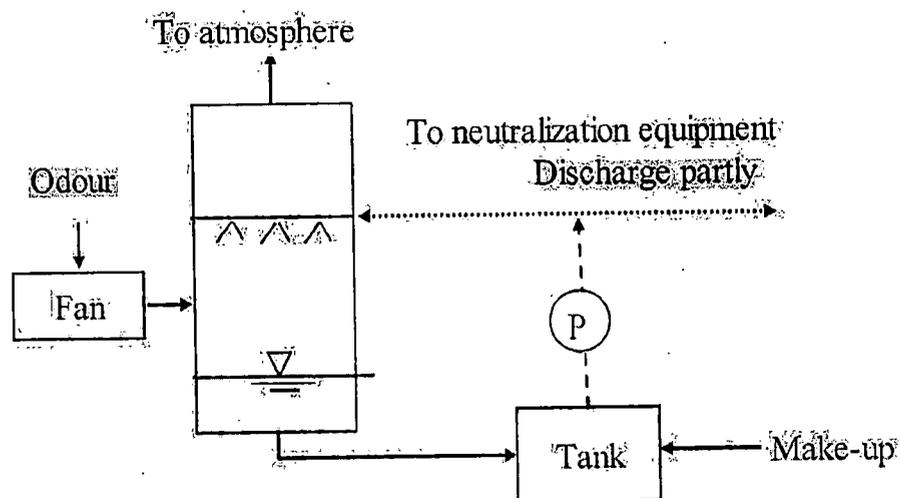


Figure A5.1-9 Schematic diagram of acid and alkaline scrubber process

4.5.9 Direct Combustion Process

i) Principle

Odour-generating substances are combusted and decomposed in incinerator at a very high temperature of approximately 800°C.

ii) Target substances

Almost all of odour-generating substances

iii) Salient Features

In case when ventilated odour-generating substances from various facilities are used as inflow to the incinerator, capital cost and operation cost would be economical. In case of individual combustion, capital cost and operation cost would be high. In this process, the temperature of air flow has to be raised high, whatever the concentration of the odour-generating substance may be. Therefore, small air flow with high concentration of odour-generating substance has advantage and higher removal efficiency. However, oxygen concentration in odour-generating gas should not be too low and SO_x and NO_x concentration in odour-generating gas should be examined.

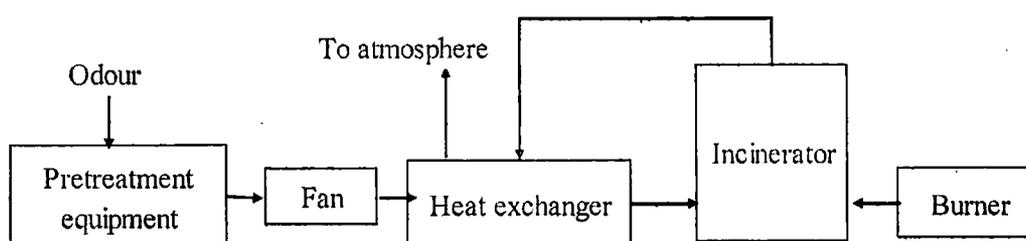


Figure A5.1-10 Schematic diagram of direct combustion process

4.5.10 Catalytic Combustion Process

i) Principle

In this process, odour-generating substances are heated up and destroyed at a temperature of approximately 350 °C by heat exchanger using incinerator in presence of catalyst such as platinum and vanadium.

ii) Target substances

Almost all the odour-generating substances

iii) Salient Features

Fuel consumption in this process is lower than that of the direct combustion process. This process is advantageous in case of high-concentration odour-generating substances below the explosion limit. If oily smoke is present, it sticks on the surface of catalyst, and reduces the activation, so it needs to be washed and removed once or twice a year.

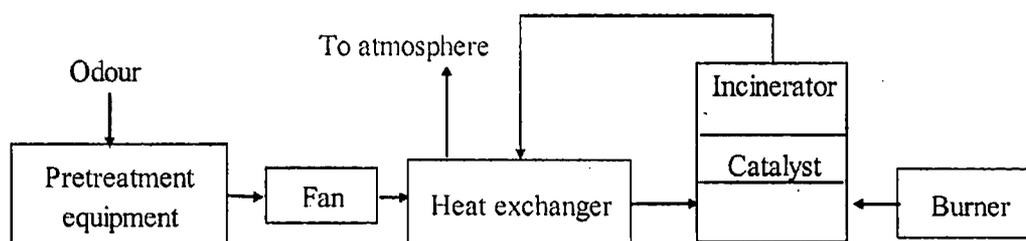


Figure A5.12-1 Schematic diagram of catalytic combustion process

4.5.11 Ozone Oxidation Process

i) Principle

Odour-generating substances are removed by the oxidation action of ozone.

ii) Target substances

Odour-generating substances with low concentration and a large volume (except ammonia)

iii) Salient Features

Ozone is harmful and with sharp smell. Monitoring of excessive ozone residue in treated gas is needed and if necessary, activated carbon system can be installed for removal of ozone. When the odour-generating substances are in wet situation, efficiency of removal will be higher.

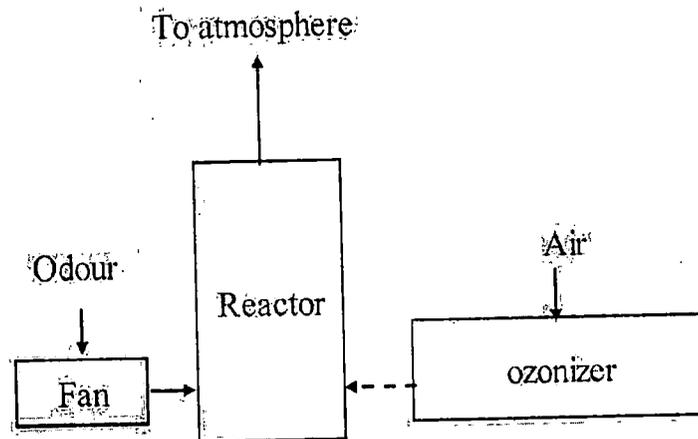


Figure A5.1-12 Schematic diagram of ozone oxidation process

4.6 Methods of Covers

1) Primary covers

Primary covers are installed near the water surface of tanks. These are well used for locations where odour is comparatively strong, such as primary sedimentation basin and sludge thickening tank, and in cases where upper parts are not used.

2) Secondary covers

Building is installed on tanks etc.

3) Double covers

This combines 1) and 2).

After collecting high-concentration odour with few quantity of air as much as possible, it is more economical to deodorize and effective. Therefore, non-working clearance of the water surface of tanks and covers, and working clearance of floors, ceilings, and walls should be necessary minimum in order to carry out operation and maintenance of the facilities.

Typical methods are shown in Figure A5.1-13.

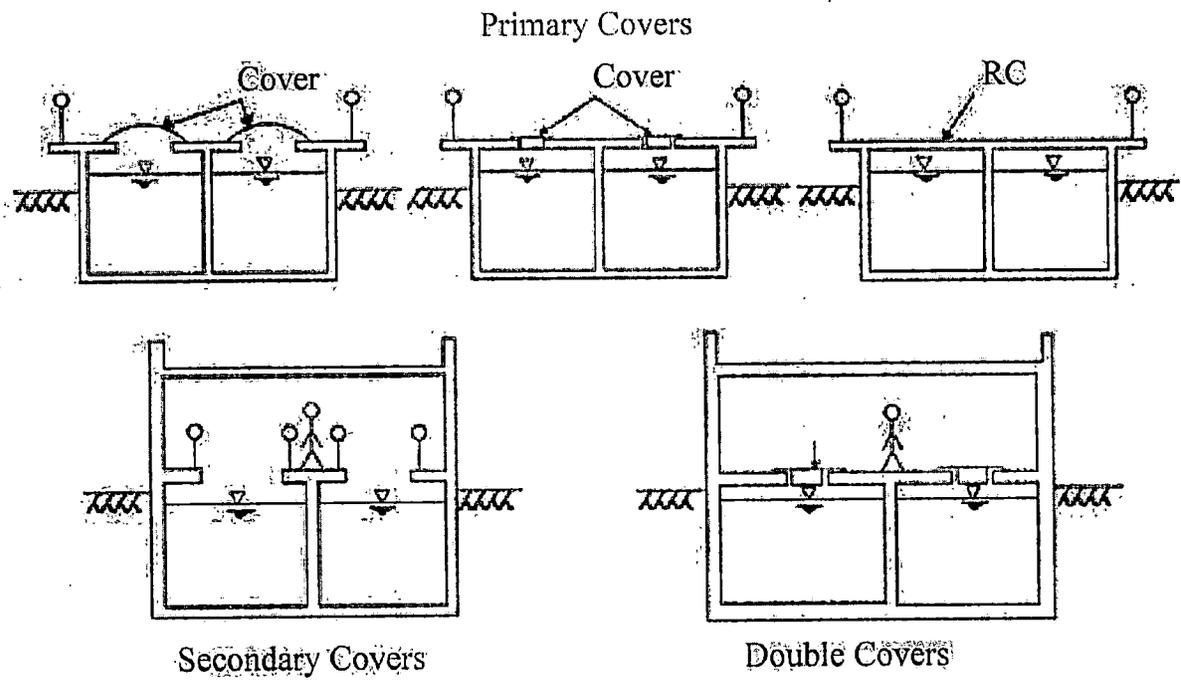
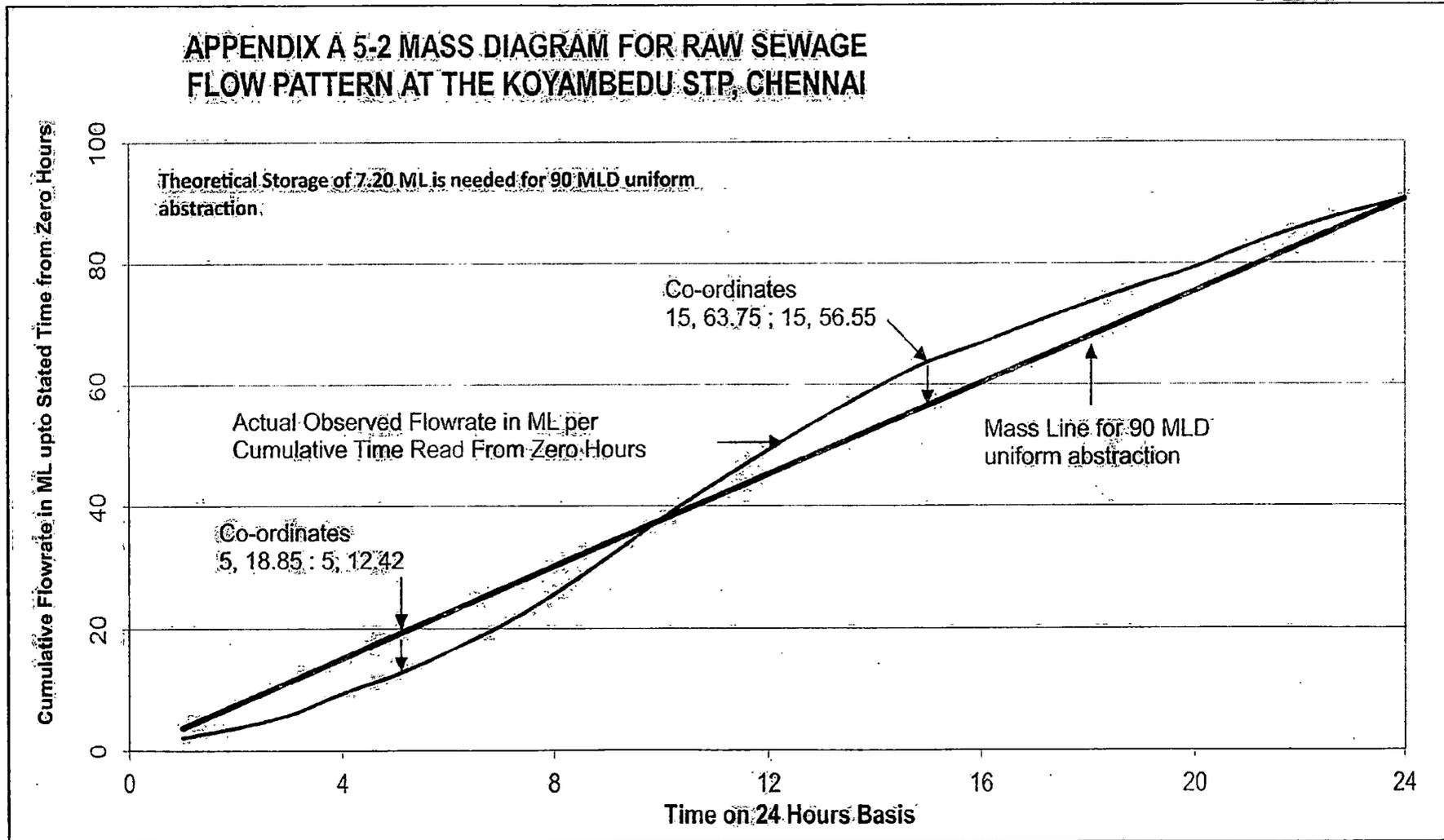


Figure A-5-1-13 Methods of providing domes over odour producing units in STPs

APPENDIX A 5.2
 MASS DIAGRAM FOR RAW SEWAGE FLOW PATTERN AT THE KOYAMBEDU STP, CHENNAI



Analysis report of Sulphide before and after dosing of ferric chloride

AT 45 MGD STP Kondli

Date	H ₂ S(mg/l) Raw Sewage (before Dosing)	H ₂ S(mg/l) Inlet 45 MGD (After dosing)	H ₂ S(mg/l) FST 45 MGD
4-May-21	3.2	-	1.6
5-May-21	3.6	-	1.2
6-May-21	3.2	-	1.2
7-May-21	2.8	-	1.6
8-May-21	3.2	-	1.2
9-May-21	3.0	-	1.2
10-May-21	3.6	-	1.6
11-May-21	3.2	-	2.8
12-May-21	2.0	-	1.2
13-May-21	3.2	-	1.6
14-May-21	3.4	-	1.8
15-May-21	3.2	-	1.6
16-May-21	3.4	-	1.6
17-May-21	2.8	-	1.0
18-May-21	2.4	-	2.0
19-May-21	3.2	-	1.8
20-May-21	4.0	-	2.6
21-May-21	1.2	-	1.6
22-May-21	3.6	-	2.4
24-May-21	2.1	-	0.2
25-May-21	4.4	-	4.5
26-May-21	4.0	0.8	4.2
27-May-21	5.4	3.0	1.0
28-May-21	4.8	2.4	1.8
29-May-21	5.4	3.6	2.2
30-May-21	6.2	3.6	1.6
31-May-21	6.0	3.6	2.8
1-Jun-21	2.8	2.0	2.8
2-Jun-21	3.6	5.2	2.8
3-Jun-21	3.2	4.4	2.4
4-Jun-21	4.3	2.8	2.8
5-Jun-21	4.8	2.4	2.0
6-Jun-21	5.2	2.4	1.8
7-Jun-21	4.8	1.8	1.6
8-Jun-21	4.8	2.0	2.0
9-Jun-21	4.2	2.0	2.4
10-Jun-21	4.0	1.8	1.2
11-Jun-21	1.6	0.8	0.4

12-Jun-21	3.6	0.4	0.8
13-Jun-21	4.2	2.0	2.0
14-Jun-21	3.6	2.0	0.8
15-Jun-21	4.0	2.4	2.8
16-Jun-21	2.6	2.0	0.8
17-Jun-21	2.6	1.6	0.8
18-Jun-21	3.4	1.6	1.2
19-Jun-21	3.4	7.3	1.2
20-Jun-21	3.2	2.0	1.2
21-Jun-21	3.2	0.8	2.4
22-Jun-21	5.6	2.8	1.2
23-Jun-21	4.8	3.2	1.6
24-Jun-21	4.2	3.0	2.8
25-Jun-21	4.4	2.2	2.4
26-Jun-21	3.4	2.0	2.4
27-Jun-21	3.6	2.0	1.2
28-Jun-21	2.8	2.0	2.4
29-Jun-21	3.2	0.8	1.6
30-Jun-21	4.0	1.2	2.4
1-Jul-21	4.2	1.2	2.4
2-Jul-21	3.6	3.2	2.8
3-Jul-21	4.8	1.6	2.2
4-Jul-21	4.0	1.2	1.2
5-Jul-21	4.4	1.2	1.2
6-Jul-21	4.8	1.6	0.8
7-Jul-21	3.0	1.2	0.8
8-Jul-21	4.4	1.2	1.2
9-Jul-21	4.0	1.2	2.8
10-Jul-21	4.4	1.2	1.2
11-Jul-21	4.4	1.6	1.6
12-Jul-21	4.0	1.2	1.2
13-Jul-21	3.6	1.2	1.6
14-Jul-21	4.8	1.6	1.2
15-Jul-21	4.0	1.2	1.6
16-Jul-21	5.0	3.6	2.0
17-Jul-21	4.8	1.6	1.6
18-Jul-21	4.8	0.8	2.0
19-Jul-21	2.4	0.8	3.2
20-Jul-21	3.2	0.4	0.8
21-Jul-21	3.8	0.8	1.2
22-Jul-21	3.8	0.8	1.2
23-Jul-21	4.0	0.8	3.2
24-Jul-21	5.2	0.8	1.6
25-Jul-21	4.0	0.8	1.2

26-Jul-21	4.4	1.6	2.8
27-Jul-21	4.4	0.8	1.2
28-Jul-21	3.6	0.4	2.0
29-Jul-21	3.2	0.4	0.8
31-Jul-21	4.0	0.8	1.6
1-Aug-21	3.6	0.4	1.6
2-Aug-21	4.2	0.8	1.4
3-Aug-21	4.0	1.2	1.2
4-Aug-21	3.6	0.8	1.2
5-Aug-21	4.8	0.4	0.8
6-Aug-21	4.4	0.4	1.2
7-Aug-21	5.8	0.8	1.6
8-Aug-21	4.4	0.6	1.2
9-Aug-21	4.8	0.6	1.6
10-Aug-21	5.2	0.8	1.2
11-Aug-21	4.8	0.8	1.6
12-Aug-21	4.4	0.8	1.2
13-Aug-21	5.8	0.6	1.2
14-Aug-21	5.2	0.8	1.2
15-Aug-21	5.6	0.6	1.2
16-Aug-21	4.4	0.6	2.6
18-Aug-21	4.4	0.8	0.8
19-Aug-21	4.0	0.6	1.0
20-Aug-21	4.8	0.8	0.8
21-Aug-21	3.2	0.4	0.4
22-Aug-21	3.6	0.8	0.2
23-Aug-21	3.2	0.8	0.4
24-Aug-21	5.2	1.2	1.2
25-Aug-21	3.4	0.8	nil
26-Aug-21	4.0	1.2	1.2
27-Aug-21	4.4	1.2	2.0
28-Aug-21	5.2	1.8	1.6
29-Aug-21	4.8	1.2	1.2
30-Aug-21	4.2	0.8	0.8
31-Aug-21	4.0	0.6	1.0
1-Sep-21	3.0	0.4	nil
2-Sep-21	2.8	0.4	nil
3-Sep-21	3.2	0.8	0.4
4-Sep-21	6.8	1.2	1.2
5-Sep-21	5.2	0.8	0.8
6-Sep-21	4.4	1.2	1.2
7-Sep-21	6.0	1.2	1.2
8-Sep-21	5.2	1.2	1.2
9-Sep-21	4.4	0.8	0.8

10-Sep-21	3.2	1.2	1.2
11-Sep-21	2.8	0.8	0.8
12-Sep-21	3.2	2.8	1.6
13-Sep-21	4.0	1.2	1.6
14-Sep-21	4.0	1.2	0.8
15-Sep-21	4.4	1.6	0.8
16-Sep-21	4.0	0.6	0.8
17-Sep-21	4.4	0.8	1.2
18-Sep-21	4.4	0.8	0.8
19-Sep-21	4.8	1.2	1.2
20-Sep-21	6.4	1.6	1.6
21-Sep-21	4.8	1.2	1.0
22-Sep-21	5.2	1.6	1.2
23-Sep-21	4.4	1.2	1.2
24-Sep-21	4.6	1.2	1.2
25-Sep-21	4.2	1.6	1.2
26-Sep-21	4.8	1.2	0.8
28-Sep-21	4.0	1.2	1.2
29-Sep-21	5.6	2.0	1.2
30-Sep-21	4.8	1.8	1.2
1-Oct-21	4.0	1.6	1.6
2-Oct-21	4.4	1.2	1.6
3-Oct-21	4.5	-	1.8
4-Oct-21	4.2	-	2.0
5-Oct-21	4.0	-	1.6
6-Oct-21	4.4	-	1.6
7-Oct-21	4.0	-	2.0
8-Oct-21	4.4	0.8	1.0
9-Oct-21	1.2	0.6	0.8
10-Oct-21	4.4	0.8	1.2
11-Oct-21	4.0	0.6	1.0
12-Oct-21	4.4	0.8	1.6
13-Oct-21	4.2	0.6	0.8
14-Oct-21	4.4	0.4	1.2
15-Oct-21	4.2	0.8	1.4
16-Oct-21	4.8	0.6	1.6
17-Oct-21	4.6	0.8	1.2
18-Oct-21	3.2	0.8	1.0
19-Oct-21	4.8	0.6	1.2
20-Oct-21	4.4	0.8	1.0
21-Oct-21	4.6	1.2	1.0
22-Oct-21	4.4	1.2	1.5
23-Oct-21	4.4	1.2	1.2
24-Oct-21	4.0	0.8	1.0

25-Oct-21	4.6	0.8	1.0
26-Oct-21	4.2	1.2	1.2
27-Oct-21	4.4	1.2	1.0
28-Oct-21	4.6	1.0	1.0
29-Oct-21	4.4	-	2.2
30-Oct-21	4.8	-	2.0
31-Oct-21	4.0	1.2	0.8

[Signature]
11/11/2021
ACWACK)

[Signature]
11-11-2021
Chemist

Blanca
11.11.21
Lab Tech./ S.G.

Ex-Eng (S.D.W.-11)