Inspection for Environmental Compliance in Industries

Chirag Bhimani

Definition

Inspection is the process of evaluating the compliance status of norms laid down by regulatory authorities.

Objective

The main objective of inspection is to:

- Determine compliance status with regulations, clearance conditions and other programme requirements;
- Verify the accuracy of information submitted by an industry;
- Verify the adequacy of sampling and monitoring conducted by the industry;
- Gather evidences to support enforcement actions;
- Obtain information that support the permitting process and
- Assess compliance with orders and consent decrees.

Types of inspection

Based on the provisions enacted in the law and past experiences, the inspection procedure can be categorized under five sub-groups, including:

- Routine inspection
- Inspection based on complaint
- Legal inspection
- Inspection for granting Consent to Establish/Consent to Operate
- Follow-up inspection

Pre-inspection preparation

The inspection procedure itself demands preparation before it can be undertaken. This includes a review of basic background information about the facility, followed by a review of the existing regulatory permits/consent applied to the concerned industries, compliance check, enforcement history.

Review of facility background information

- Maps showing facility location, plumbing—including wastewater discharge points (outlets), sampling points, overflow and bypass points—and geographical features;
- Plant layout and process flow diagram;
- Name, title, phone numbers and other contact details of the responsible facility officials;
- Any special entry requirements (public sector undertaking/defense establishment);

Review of facility background information

- Any safety requirements (shoes, gloves, helmet);
- A description of processing operations and wastewater discharges / emission / hazardous waste generation;
- Production levels—past (for the last six months), present and future;
- Hydrological data, Meteorological data;
- Geology and hydrogeology of the area;
- Changes in facility conditions since previous inspection / permit application and
- Aerial photographs, if any available.

Requirements, regulations and limitations

This is the second step when talking about industry-specific information/data collection. Once the basic data about the concerned industry is received, the following documents are required to be prepared:

- Copies of existing consent / authorization, regulations, requirements and restrictions placed on industry discharges;
- Monitoring and reporting requirements and available monitoring stations;

Requirements, regulations and limitations

- Special exemptions and waivers, if any;
- Receiving stream-water-quality standards;
- Information concerning sludge, air, solid and hazardous-waste treatment and disposal and
- Status of air quality of the area.

Facility compliance and enforcement history

Collecting previous historical data of an industry is important as it helps understand the trend the industry has followed over the years. The following is the list of the information that should be collected:

- Previous inspection reports;
- Correspondence among the facility, local, state and federal agencies;
- Complaints and reports, follow-up studies, remedial actions;

Facility compliance and enforcement history

- Documentation on past compliance violations, exceedence, status of requested regulatory action;
- Enforcement actions such as compliance schedule and consent orders;
- Status of current and pending litigation against facility;
- Self-monitoring data and reports;
- Previous reports by Central and State Pollution Control Boards, consultants, and environment statements;

Facility compliance and enforcement history

- Previous deficiency notices issued to facilities;
- Laboratory capabilities and analytical methods used by facility;
- Names of contract laboratory, Previous Discharge Monitoring Report (DMR), Quality Assurance (QA) files and reports, Permit Compliance System (PCS) information;
- Reports from special studies (e.g. stream monitoring, internal audits) and compliance schedule and
- Reports from meteorological studies, air quality modelling etc.

Pollution control and treatment systems

This is the most important information that an inspection authority must seek before going for inspection. The following is the list of information required under this head:

- Description and design data for pollution control system and process operation;
- Sources and characterization of discharge;
- Type and amount of waste discharged;
- Spill prevention contingency plans, Available routes for bypasses or diversions and spill containment facility and
- Pollution control units, treatment methods and monitoring systems.

Development of inspection plan

Once the basic information is received from the concerned industry during the pre-inspection procedure, an inspection plan is to be developed keeping in mind the following parameters:

Objectives:

- What is the purpose of the inspection?
- What is to be accomplished?

Tasks:

- What tasks are to be conducted?
- What information is to be collected and records are to be reviewed?

Development of inspection plan

Procedures:

- What procedures are to be used?
- Will the inspection require special procedures?

Resources:

- What personnel will be required?
- What equipment will be required?

Development of inspection plan

Schedule:

- What will be the time requirements and order of inspection activities?
- What will be the milestones?

Coordination:

- What coordination with laboratories or other regulatory agencies will be required?

Inspection Procedure

The inspection procedure of the preceding five categories—routine inspection, inspection based on complaint, legal inspection, inspection for granting Consents and follow-up inspection comprises the following five steps:

- Entry
- Review of records
- Conference with relevant officials
- Self-regulatory system
- Reconnaissance survey

Entry

Entry comprises the interaction between inspector and officials of the respective facility at the gate. The inspector shows his credentials (identity card and legal documents etc.) to seek permission to enter the premises of the factory. If permission is granted, the inspection team registers their names in the visiting register of the company. If possible, a photograph of the register along with signatures is kept for records.

Review of records

Reviewing records is part of the inspection process that is initiated once data has been received from various departments. The objective of the reviewing process is to assess the following:

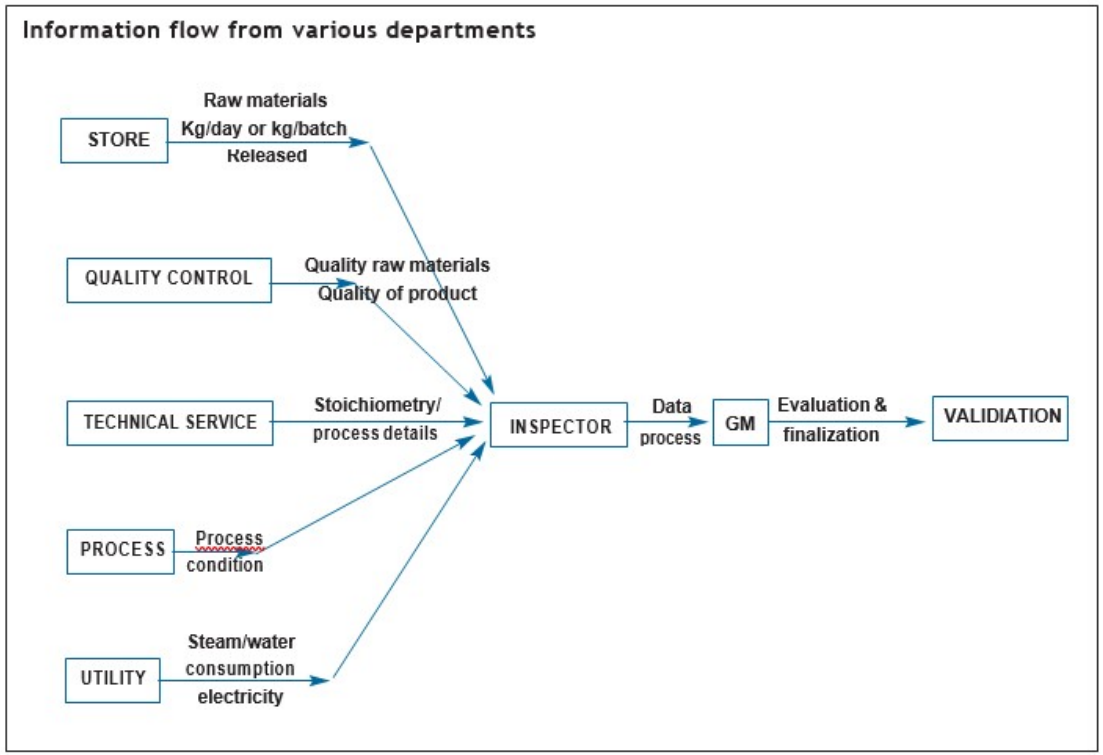
- Is the facility-verifying data being collected as required by the consent/authorization?
- Is all required information available? Is the information current?
- Is the information being maintained for the required time period?
- Does the record review indicate areas needing further investigation?
- Are the records organized? Do they show competence?

Conference with facility officials

A successful environment management is a backward integration. The composition and quantity of wastewater, emission and hazardous waste generation is dependent on overall efficiency of production process which also develop to benchmark raw material, water and energy consumption per unit/or per batch basis. This is actually can be made through water, energy and material balance.

It is not possible to develop mass balance until all the departments have participated for a cross- check. It is understood that each department is a storehouse of information with respect to its functions. The inspector will use this information to evaluate and validate the data provided by the facility.

Conference with facility officials



Self-regulation

On compliance regulations, intention is an important factor. There are industries that implement pollution control on statutory obligations. There are also companies that comply with consent conditions beyond statutory obligations, and companies that are unwilling to follow the regulations. This is reflected in the self-regulatory mechanisms inbuilt in an organizational structure.

A company with good intentions has a well-organized environmental division, headed by one at least at the Deputy General Manager (DGM) level (generally found in a large company) who reports directly to the occupier or those having control over the activities of the premises. The person has the backing of an accredited laboratory and reasonable manpower.

Self-regulation

The environmental division will have the access to the relevant information regarding the consumption of raw materials, fuel and water, and quantity of production. It is observed that in some companies, the operation of effluent treatment plant (ETP) and air pollution control devices (APCD) is vested with the environmental division, whereas in some cases the operation of the ETP and APCD is vested with the production unit. The environment division in those cases monitors and evaluates the performance of the ETP, APCDs and other relevant areas related to the environmental management.

Self-regulation

It is observed that the second option of monitoring and evaluation of the performance of pollution control devices by the environmental division is more appropriate than giving them the responsibility of operating the devices. The approach of the environmental division of the industry shall be as follows:

- Laying down a monitoring network on wastewater generation/hazardous waste generation/air emission with respect to each unit of operation/unit process for total pollution generation assessment at regular intervals;
- Performance evaluation of ETP and APCDs;

Self-regulation

- Continuous monitoring at the designated outlet as per the consent conditions in case of wastewater discharge;
- Updation of hazardous waste inventorization, storm-water drain monitoring;
- Ensuring statutory compliance with respect to hazardous chemical storage;
- Inspecting and monitoring storm-water drains;
- Transparency with respect to information dissemination to general public and stakeholders;
- Training and awareness programme for employees;

Self-regulation

- Emergency preparedness;
- Record-keeping, data processing, interpretation and continuous evaluation of environmental management;
- Self-monitoring and ensuring operation and maintenance of pollution control systems and
- Supporting regulatory inspections.

Self-regulation

A self-regulation programme can be successful if the participation of all employees is ensured. This can only be achieved with a well-designed training programme. The design of the training programme is based on the target.

Reconnaissance survey

No inspection is complete without a reconnaissance survey by an inspector. The word reconnaissance means on-the-spot inspection and collection of evidences through reconnaissance survey with the aid of photographs, measurement and sampling. Reconnaissance survey also includes interview with the concerned company personnel, the neighbourhood and the complainant, if the inspection is based on complaint.

The reconnaissance survey generally emphasizes on housekeeping, performance of the pollution control devices, facilities for sampling etc.

Reconnaissance survey

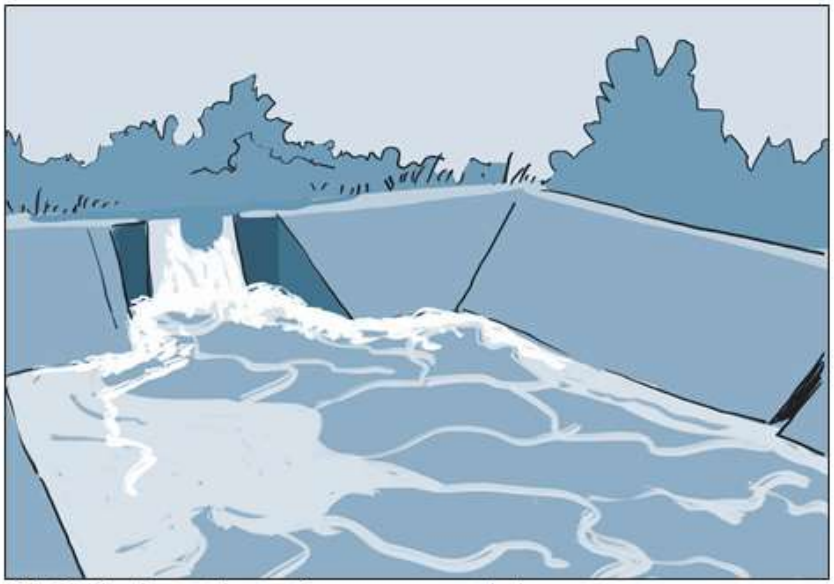
Checklist for outlet conditions :

- Outlet conditions
- Storm-water drains
- Reconnaissance survey on condition of biological treatment plant

Reconnaissance survey

A. Outlet conditions

This facility has inadequate space for sampling and is not properly maintained



This facility does not have a flow measurement device

Reconnaissance survey

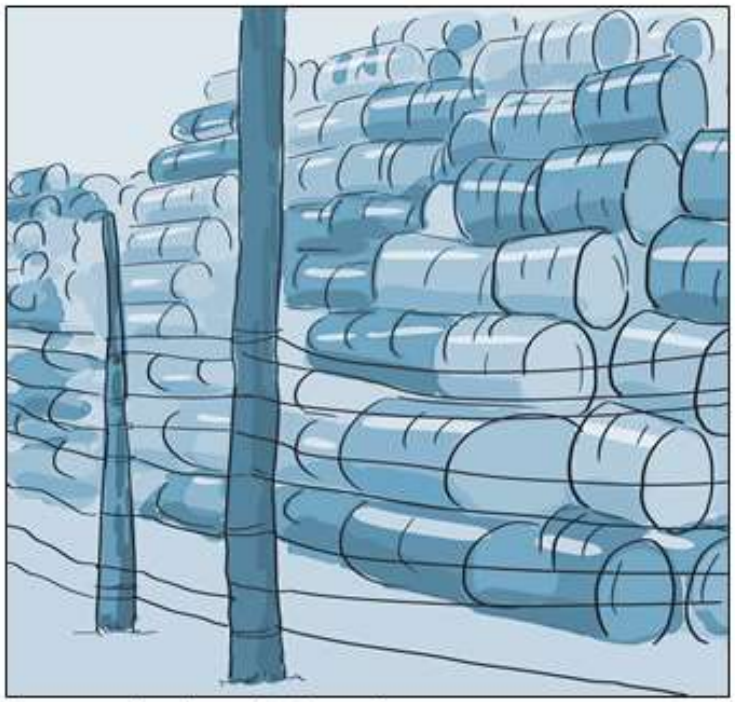
A defined outlet with a V-notch

Reconnaissance survey

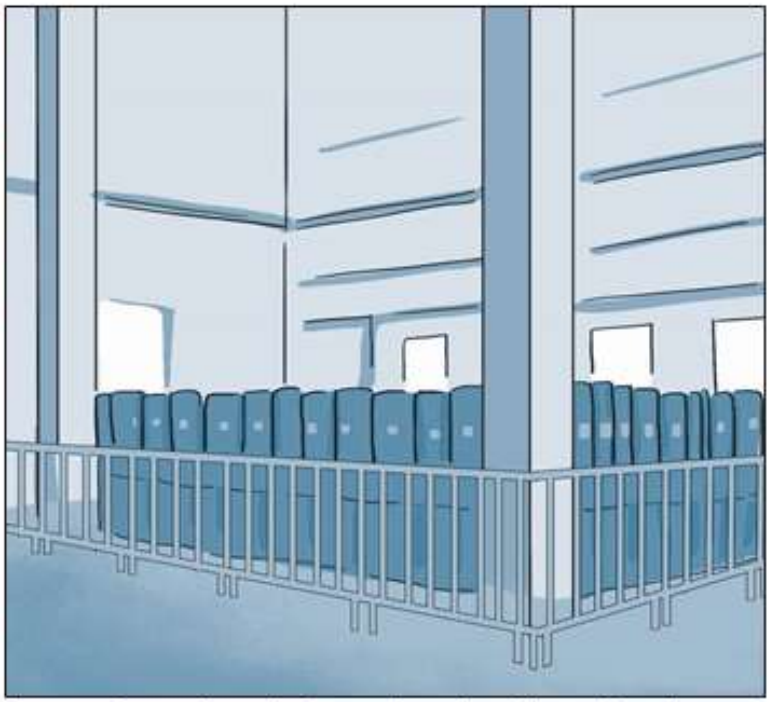
The reconnaissance survey of hazardous waste management and handling would comprise of the following four aspects:

- Waste container management system
- Waste Accumulation Area
- Waste Satellite Accumulation Area
- Illegal dumping, if any

Reconnaissance survey



Incorrect: Poorly stacked containers



Correct: Properly stacked containers in well-ventilated storage

Reconnaissance survey

Bad housekeeping—haphazardly stacked containers

Properly maintained waste containers on a platform

Reconnaissance survey

While inspecting, the following points are to be considered for air emissions:

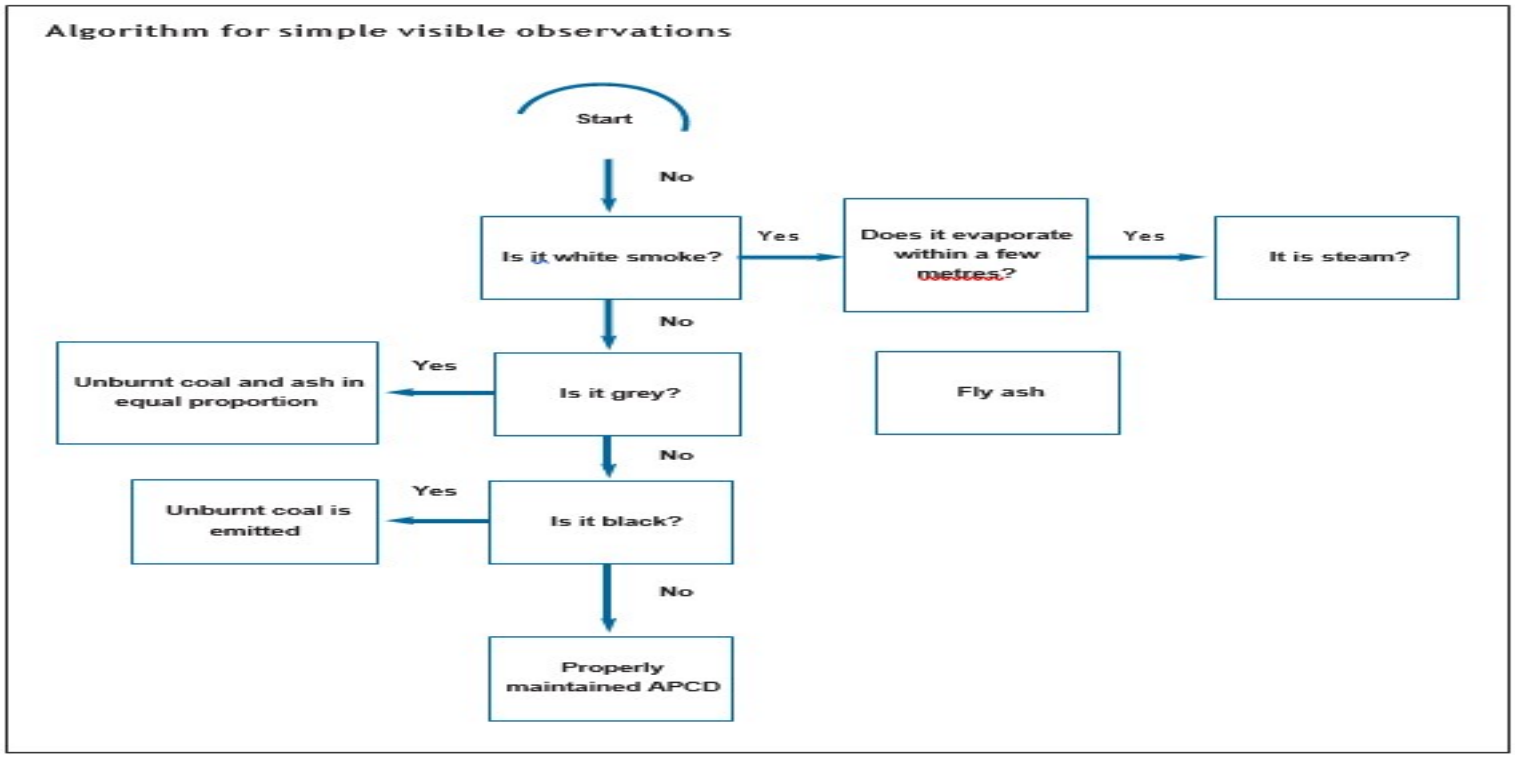
- What are the possible point sources (channelized) in the complex?
- What are the sources of combustion? How much load of particulate matter, sulphur dioxide and nitrogen oxides are generated in terms of tonnes per day?
- What are the sources of conventional parameter? Is it from combustion, processes or other sources?
- What are the most probable pollutants from vent-off and purge gases?

Reconnaissance survey

Reconnaissance survey on air pollution

- Visual observation of colour from smoke stack
- Check for particulate matter abatement options
  - Cyclone
  - Bag filter
  - Scrubber
  - Boiler
  - Electrostatic precipitator

Reconnaissance survey



Development of Checklists

Checklist for entry into gate					
		Yes	No	NA	Remarks/reasons/any other details thereof
a.	Is there a proper entry system at the gate of entry?				
b.	If yes, are the duty officials aware of the State Pollution Control Board (SPCB) or concerned regulators?				
c.	Is the duty official prompt enough to contact the relevant person?				
d.	If the answer to 'c' is no, is the delay due to the duty officer at the gate?				
e.	Is there a system of dematching or any other kind of restriction at the gate?				
f.	Is the duty official helping in the entry of sampling equipment?				
g.	Is there any unusual behaviour at the gate?				
h.	Is there a refusal for entry for inspection?				
j.	What is the reason? (Record the reason)				

Development of Checklists

Basic information checklist					
		Yes	No	NA	Remarks/reasons/any other details thereof
a.	Has the validity period of the consent expired or is it about to expire?				
b.	If the answer to 'a' is yes, have you applied for the renewal of consent?				Show the documents
c.	Has the environmental audit been conducted in the last three years?				
d.	Has any action been taken to report on the recommendation of the environmental audit?				Show the documents
e.	Has the safety audit been conducted in the last three years?				
f.	Has there been any action to report on the recommendation of the safety audit?				Show the documents
g.	Did you receive any complaints in last three years?				If the answer is yes, show the action taken by the industry
h.	Has a legal notice been served?				If the answer is yes, show the action report
j.	Is there any volunteering certification process?				If the answer is yes, show the document

Development of Checklists

Basic information checklist					
		Yes	No	NA	Remarks/reasons/any other details thereof
a.	Has the validity period of the consent expired or is it about to expire?				
b.	If the answer to 'a' is yes, have you applied for the renewal of consent?				Show the documents
c.	Has the environmental audit been conducted in the last three years?				
d.	Has any action been taken to report on the recommendation of the environmental audit?				Show the documents
e.	Has the safety audit been conducted in the last three years?				
f.	Has there been any action to report on the recommendation of the safety audit?				Show the documents
g.	Did you receive any complaints in last three years?				If the answer is yes, show the action taken by the industry
h.	Has a legal notice been served?				If the answer is yes, show the action report
j.	Is there any volunteering certification process?				If the answer is yes, show the document

Development of Checklists

Information checklist for raw material consumption					
		Yes	No	NA	Remarks/reasons/any other details thereof
a.	Has the production in the last six months been as per the consent condition?				Please check the excise record. Record as significant/not significant
b.	If the answer to 'a' is no, has it been reported to SPCB?				
c.	Has there been any off-specific product in the last six months	?			
d.	If the answer to 'c' is yes, has it been disposed of under the hazardous-waste rules?				Please indicate the procedure of management of such product
e.	Does the industry produce any non-consented products?				
f.	Is the raw material consumption as per the consent condition? Show the report of the last six months.				
g.	If the answer to 'c' is no, has it been reported to SPCB?				
h.	Are the impurities of raw materials quantified?				
j.	Is there a significant amount of impurities, is it estimated in terms of emissions and solid waste generation and discharge in wastewater?	d			

Development of Checklists

Checklist for assessing the adequacy of treatment technology					
		Yes	No	NA	Remarks/reasons/any other details thereof
a.	Is the identified waste water stream correct?				
b.	Is the classification of the streams with respect to toxicity, biodegradable and TDS?				
c.	Is the stream-wise treatment scheme adequate (ISBL)?				
d.	Is the combined wastewater compatible with OSBL treatment (outside battery limit)?				
e.	Is the entire scheme of treatment approved by SPCB?				

Development of Checklists

Information checklist on storage of hazardous waste					
		Yes	No	NA	Remarks/reasons/any other details thereof
a.	Does your industry store hazardous waste on site prior to treatment or disposal?				
b.	Do all containers holding hazardous waste manage to prevent releases according to the requirement?				
c.	What is the time period of internal storage?				

Development of Checklists

General checklist for air emissions

		Yes	No	NA	Remarks/reasons/any other details thereof
a.	Is the air pollution generated through combustion?				
b.	If 'a' is yes, is the quantity of fuel used as per the norms?				
c.	If 'b' is changed, has it been reported to the SPCB?				
d.	Is the appropriate air pollution control device installed?				Is the device is based on the best practicable approach or is it an improvised devices?
e.	Is the stack height is as per approval of the SPCB?				
f.	Are there any air pollutants from the process?				
g.	Is it toxic?				
h.	Is appropriate technology installed to control toxic air pollutants?				
j.	Is there any solvent emitted?				
j.	Is it estimated or measured?				
k.	Is there any solvent recovery plant?				Show the efficiency of the solvent recovery plant
l.	Is the problem of fugitive emissions addressed adequately?				Furnish the action taken document
m.	Is there any LDAR programme in the industry?				Please check the protocol of programme

Thanks!

Any questions?

You can find me at

- @BhimaniChiraag
- chirag@bhimani.in