GRANTING CONSENT UNDER WATER ACT, 1974

By:
Dr. D.D. Basu
Advisor, CSE
Former Scientist, CPCB

What is Consent ?

Consent is a permit to discharge /emit pollutants within the limit stipulated by the regulatory authorities

Legislative Provision under Water Act

Under Section 25 of said Act, it is stated that

"(1) Subject to the provisions of this section, no person shall, without the previous consent of the State Board,--

(a) establish or take any steps to establish any industry, operation or process, or any treatment and disposal system or an extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land (such discharge being hereafter in this section referred to as discharge of sewage); or

(b) bring into use any new or altered outlets for the discharge of sewage; or

(c) begin to make any new discharge of sewage; "

Definition of Pollution sources

- “**Trade effluent**" includes any liquid, gaseous or solid substance which is discharged from any premises used for carrying on any [6]["Industry, operation or process, or treatment and disposal system" other than domestic sewage

- “**Sewage effluent**" means effluent from any sewerage system or sewage disposal works and includes sullage from open drains.

Definition of Conveyance System

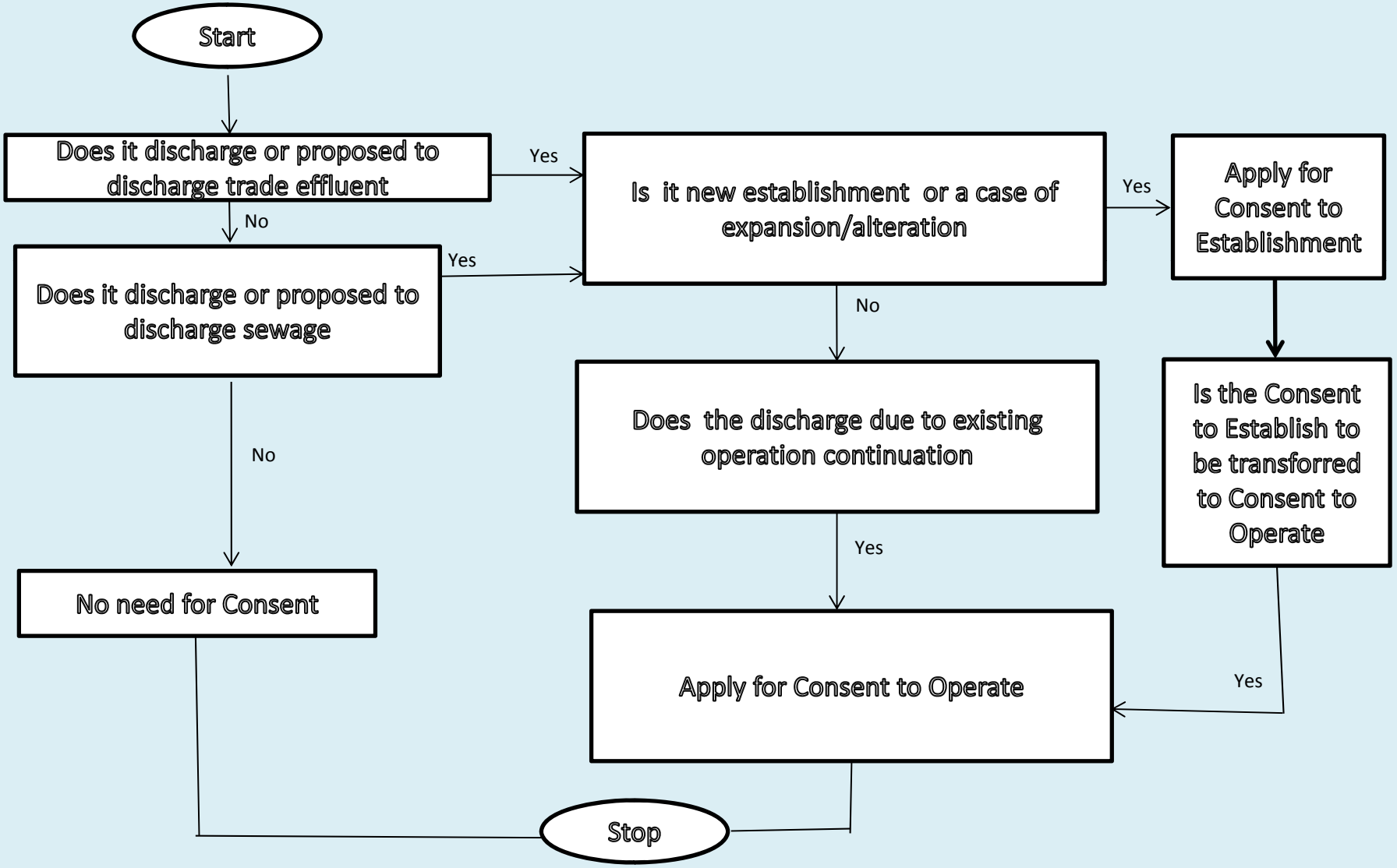
“Sewer" means any conduit pipe or channel, open or closed, carrying sewage or trade effluent.

Type of Consent

There are two types of consent. One is consent to establish and the other one is consent to operate.

- **Consent to establish (CTE)** – This is for the proposed new establishment or expansion of existing industries or changing of product mix or addition and changing outlet. This shall take into account the impact on the receiving water bodies or land due to discharge of waste water. This shall also consider the withdrawal of water. In addition to above, it also evaluates the proposal to water use and waste water collection, treatment and disposal mechanism. The proposal shall also include renovation, reuse and recycling of waste water.
- **Consent to operate (CTO)** – Consent to operate basically on the basis of performance of waste water management during operation. Renewal of consent is provided to continue with existing situation.

Who Needs Consent under water Act, 1974



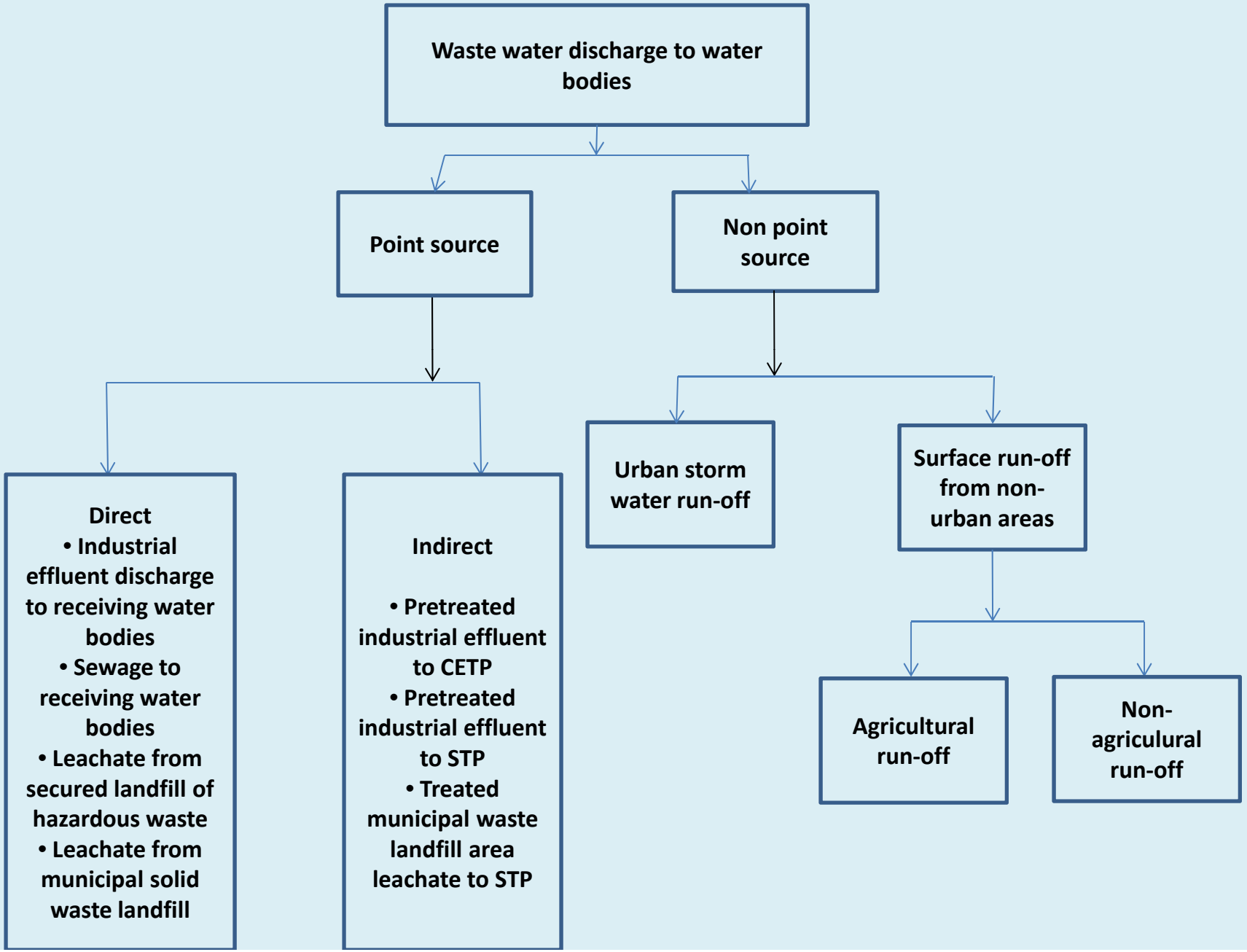
It is observed that crux of the consent mechanism is lying with the trade effluent and sewage

The Act clarifies its position under Section 2(k) related to trade effluent and under Section 2 (g) by defining “trade effluent” and “Sewage effluent “.

“Trade Effluent” includes any liquid, gaseous or solid substance which is discharged from any premises for carrying on any (industry, operation or process, or treatment and disposal system) other than domestic sewage.

“Sewage Effluent” means effluent from sewerage system or sewage disposal works and includes sullage from open drain.

Classification of Waste Water Discharge

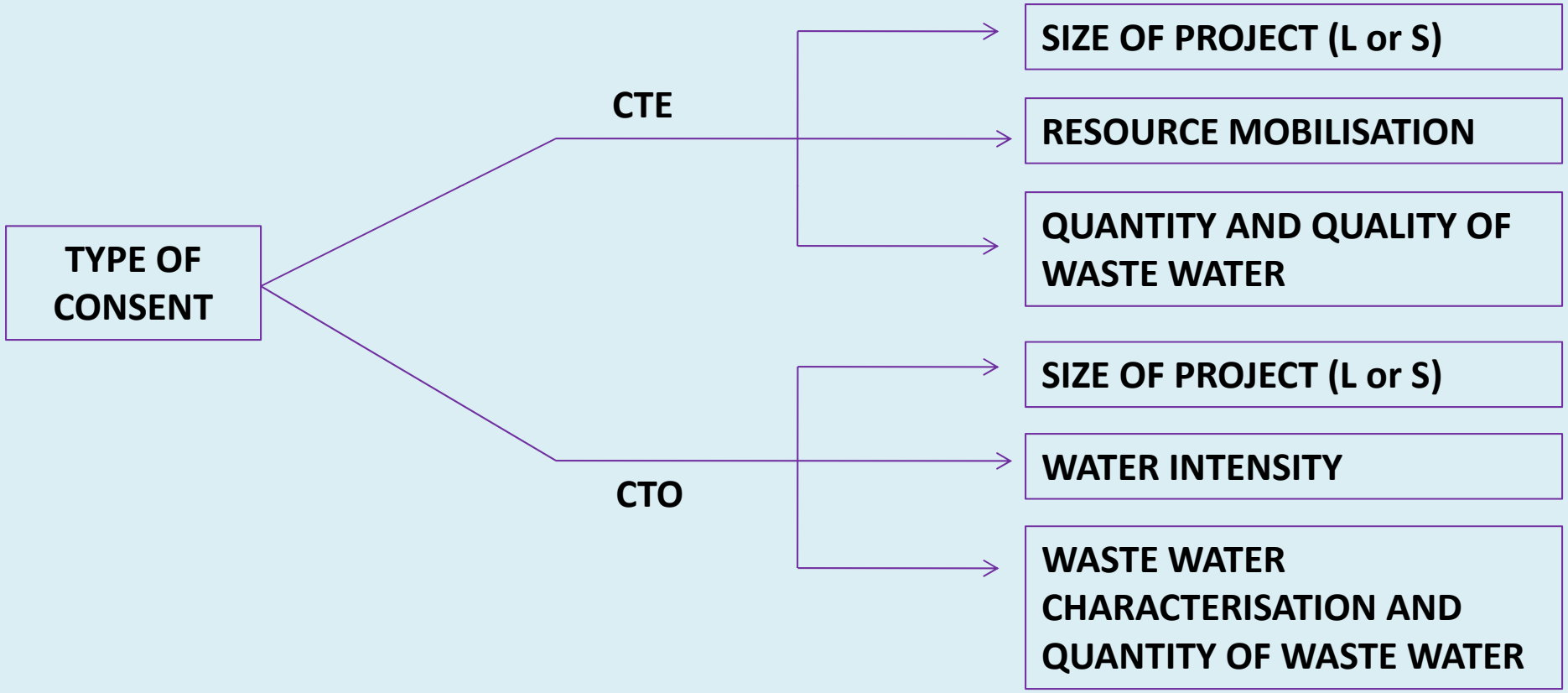


- Under the provision of Section 25/26 of the Water Act, 1974, Consent to Establish (CTE) or Consent to Operate (CTO) is confined to point source discharge. However, the control of non point source is given its due importance with a separate mechanism such as water quality management under the provision under Section 17 (1), i.e. “To plan a comprehensive programme for the prevention, control or abatement of pollution of streams and wells in the state and to secure the execution thereof”.
- It is therefore to be concluded that any person likely to establish any industry, operation or process, or any treatment and disposal system or an extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or land shall obtain Consent to Establish or Consent to Operate as the case deems fit.

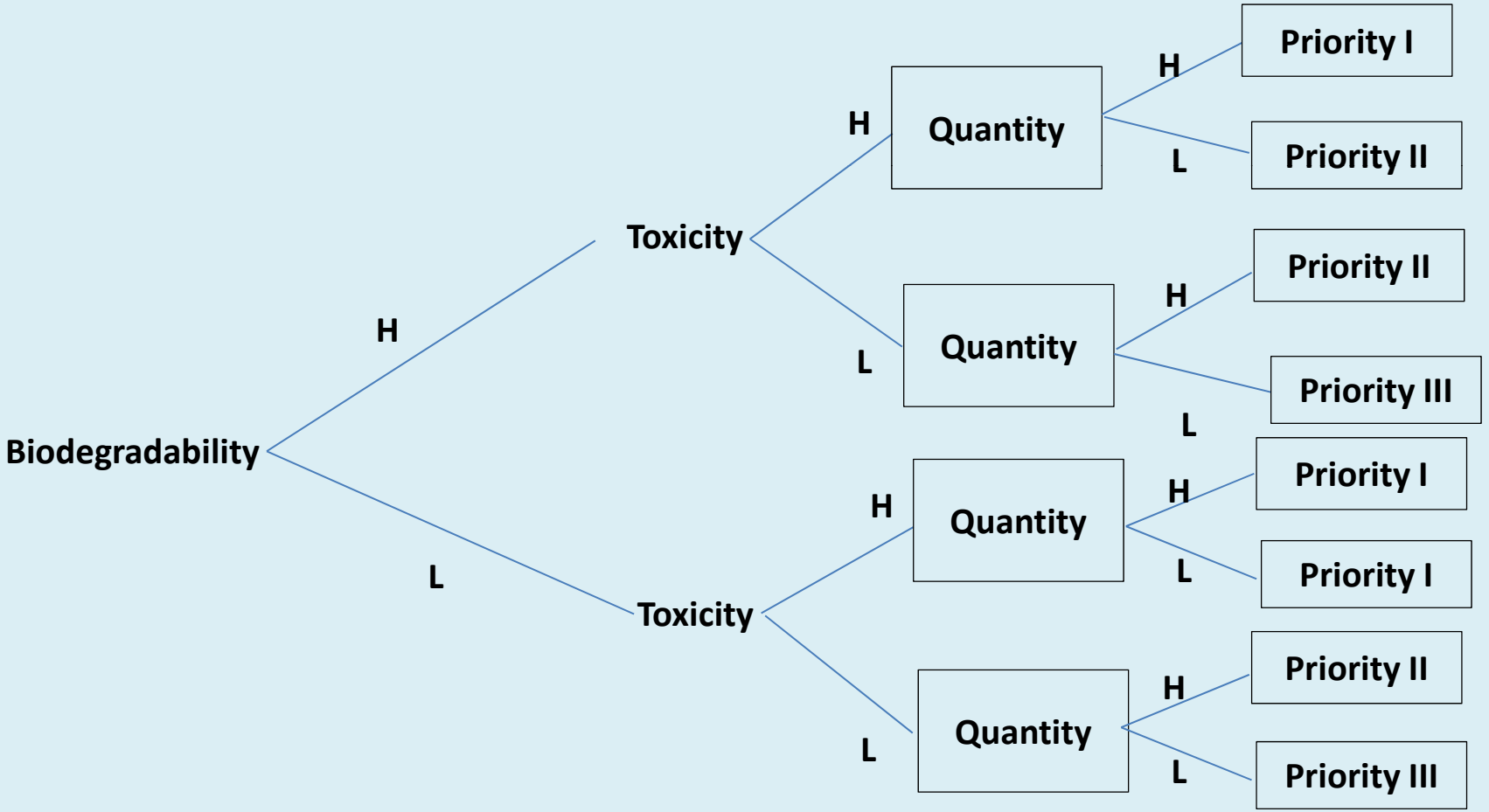
Consent Condition Under Water Act

Sr. No.	Consent Condition	Provision Under Water Act
1	Validity of Consent	25 (4) (iii)
2	Site Selection	17(n)
3	Layout Plan and House keeping	25 (4) (iii)
4	Source of Water	17(n)
5	Quantity of Water Consumption and Waste Water Discharge	25 (4) (ii)
6	Quality of Waste Water	25 (4) (ii)
7	Outlet	25 (8) (a) (b), 25 (4) (ii)
8	Collection of Waste Water	25 (8) (a) (b)
9	Collection of Storm Water and Disposal	25 (8) (a) (b
10	Product and Product Mix	25 (4) (i) (ii)
11	Quantity of Raw Material Consumption	25 (4) (i) (iii)
12	Waste Water Treatment	25 (4) (i) (ii)
13	Self Regulation	20 (2) (3) 25 (3) 31 (1) (2)

Validity Period



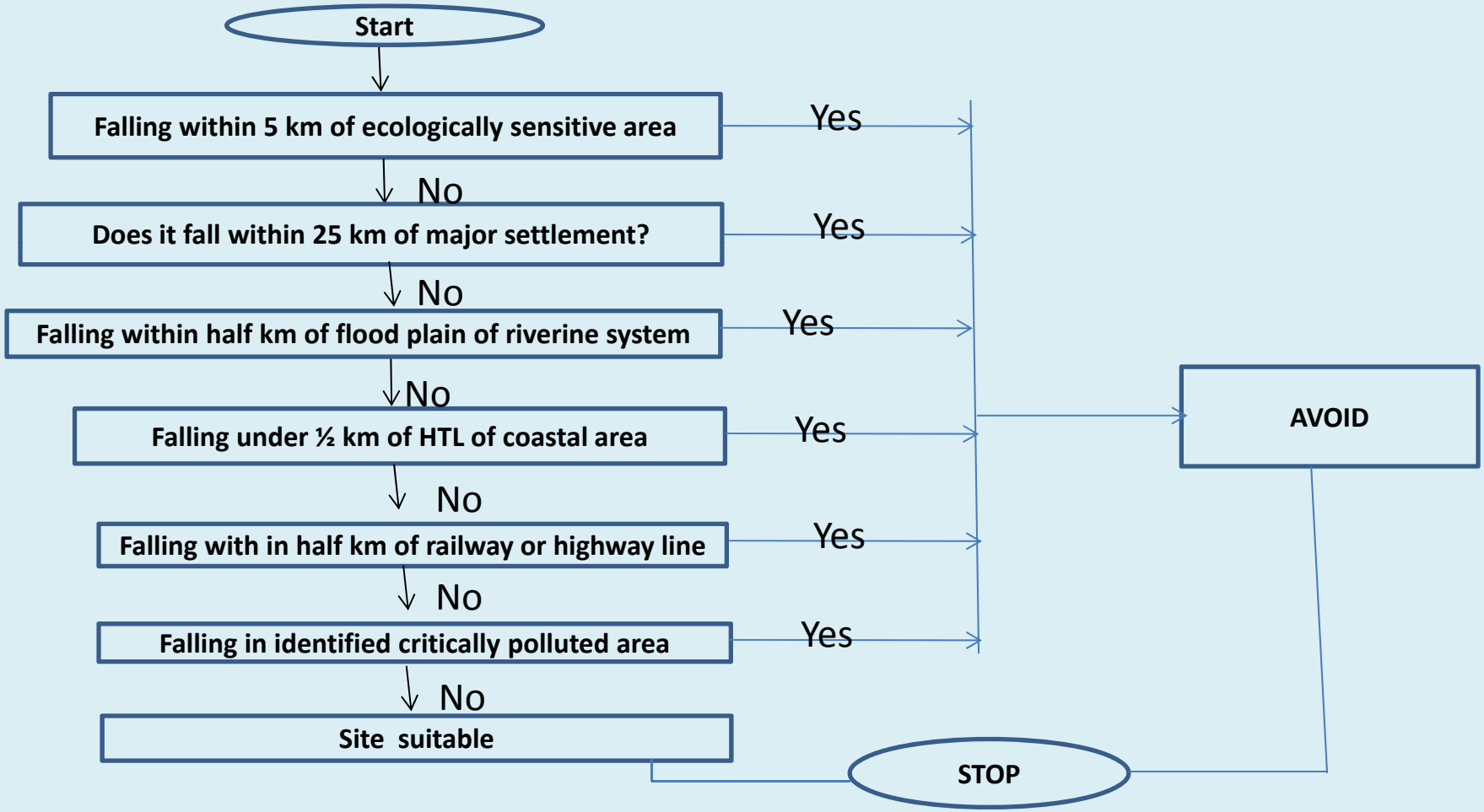
Prioritization on Biodegradability/ Toxiciy/Quantity of Waste Water Discharge Combination



Validity Period With Respect To Type Of Consent And Categorization Of Industries

	Consent Type	
Categorization of Industries	Consent to Establish	Consent to Operate
Red (60)	5-7	1-3
Orange (83)	3-5	3-5
Green (63)	1-2	10-15
Green (63)	1-2	10-15

Algorithm for Site Selection of Industries



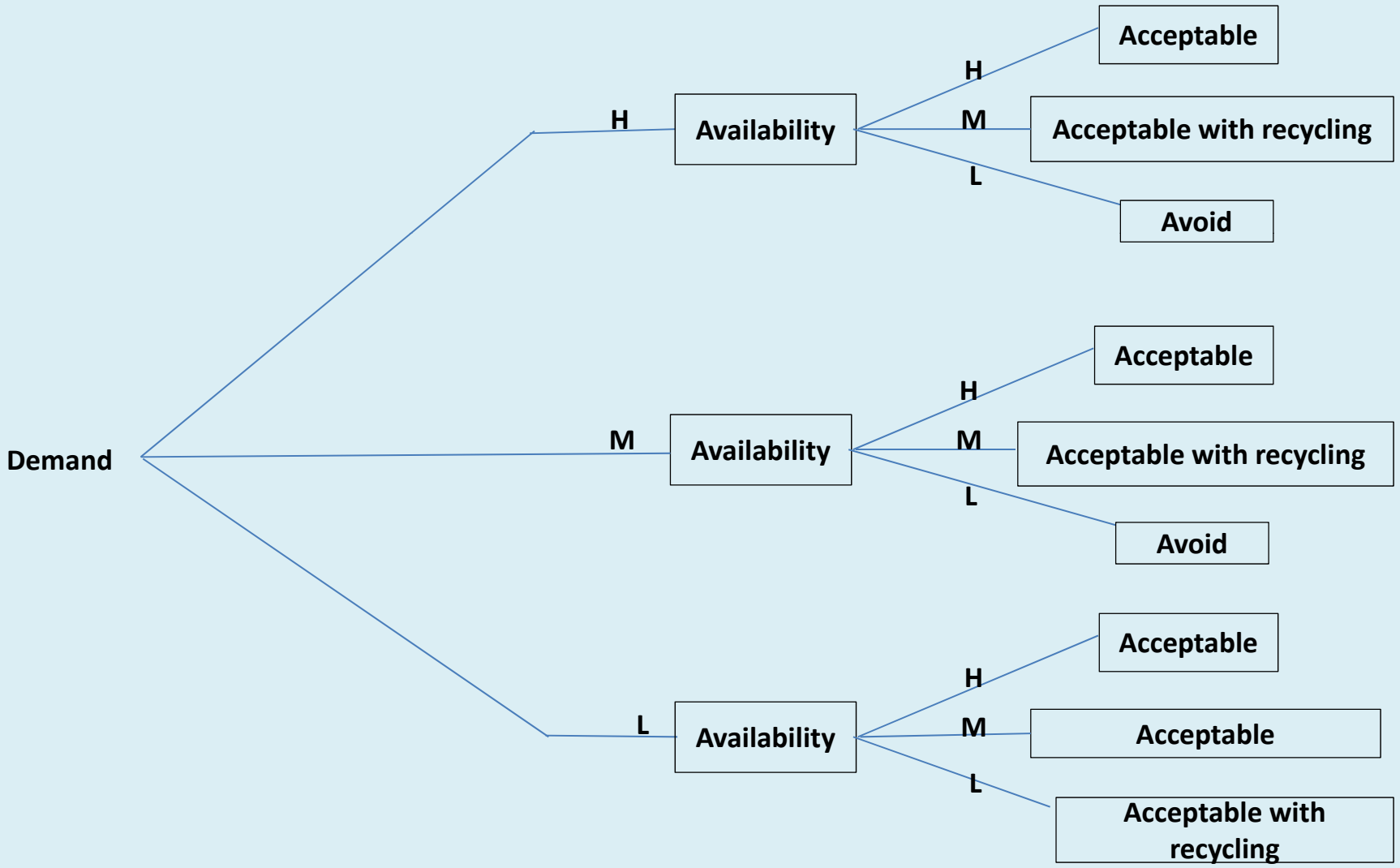
Sources Of Water

*Preferential Choice

Coastal → **River** → **Lake** → **Ground Water**

- River and lake not for cooling resources
- Ground water not for industrial purpose

Demand & Availability Of Water Resources



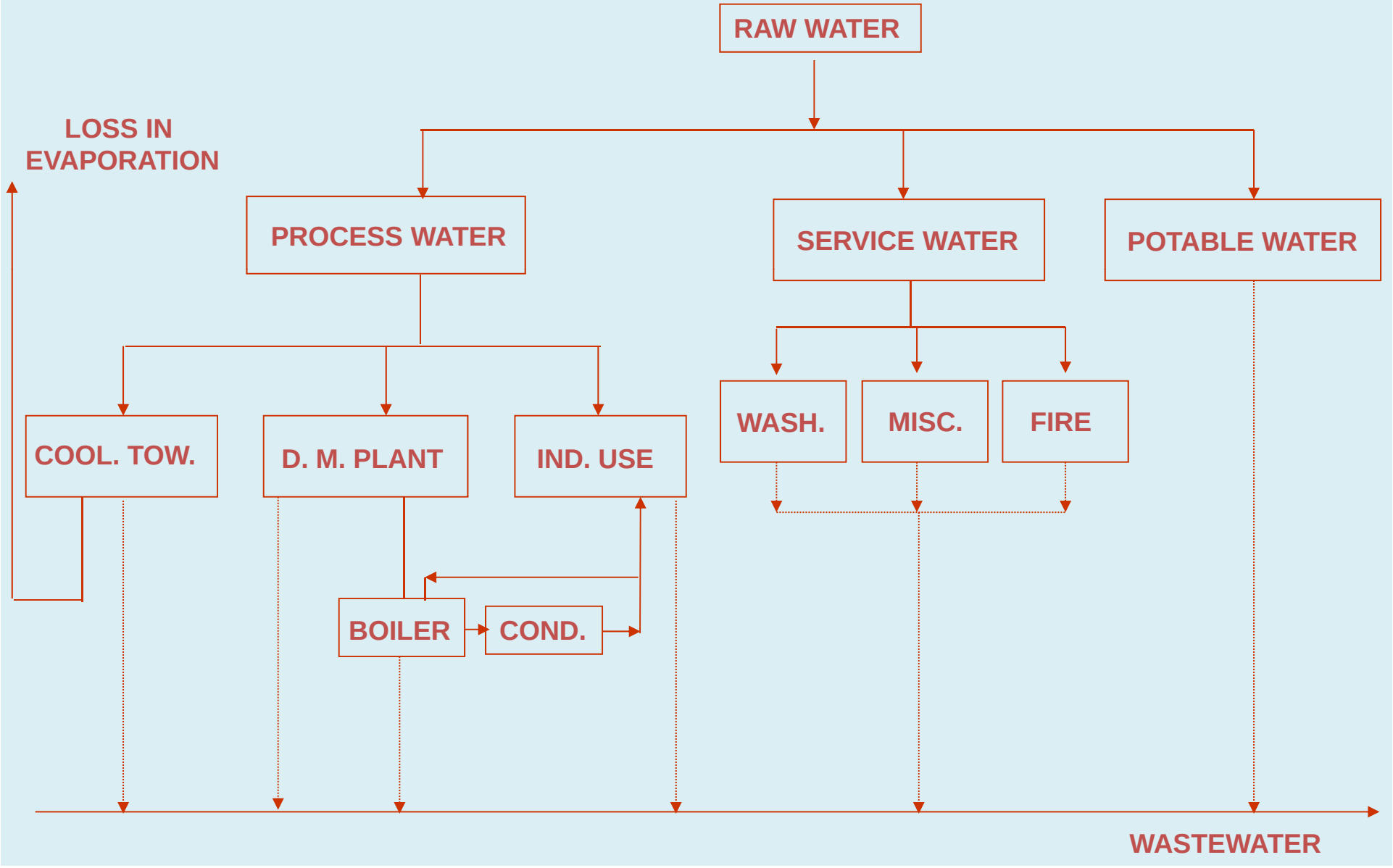
Best Practicable Means
For
Waste Water Treatment

Best practicable technology means a level of technology represented by the most practiced existing wastewater treatment performance levels within the industrial category with due regard to techno-economic feasibility.

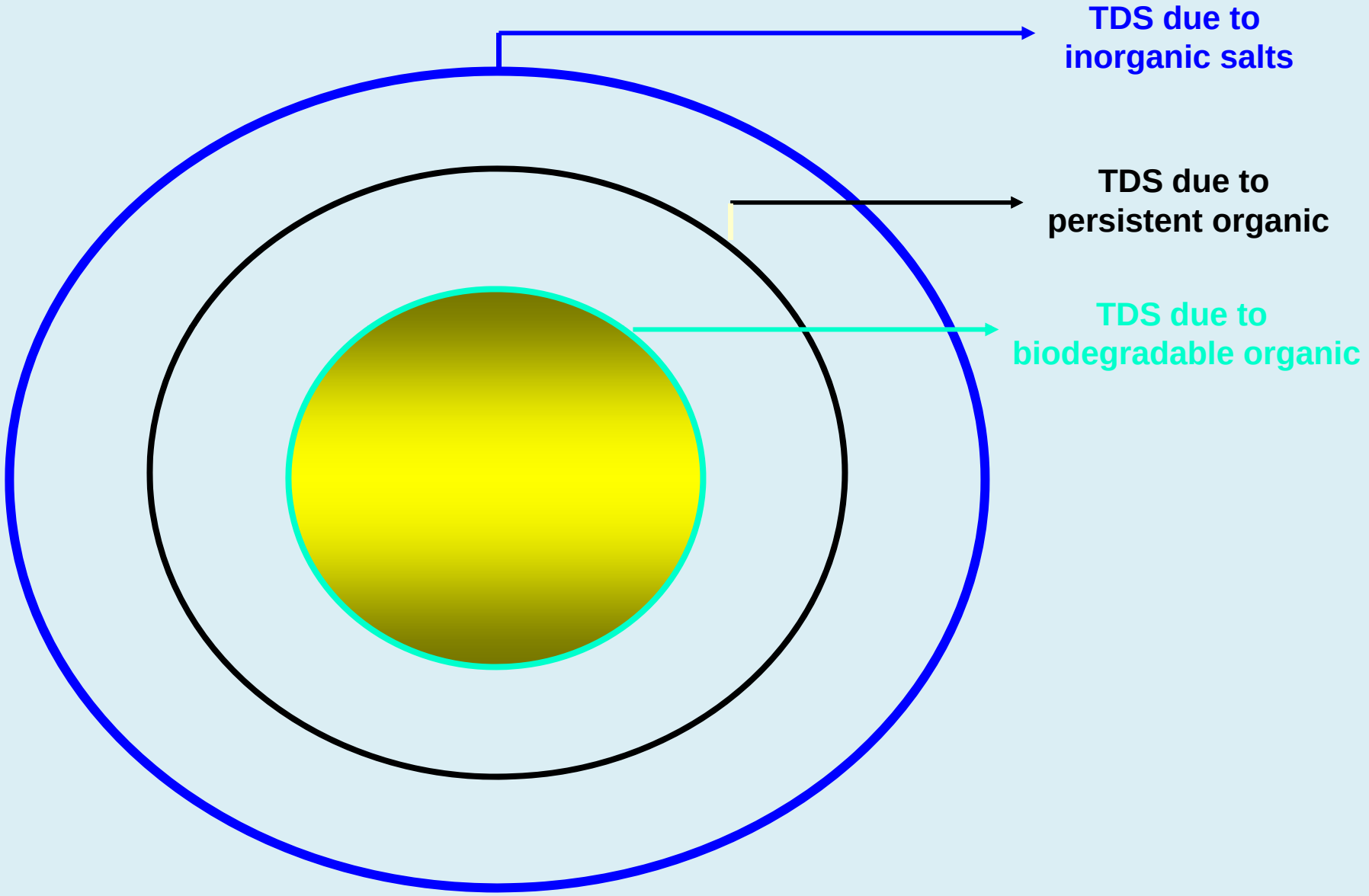
How To Approach ?

- Step 1 – Water Balance
- Step 2 – Wastewater characterization
- Step 3 – Identification of wastewater sources from unit operation and unit process
- Step 4 – Segregation of streams with respect toxicity, biodegradability, persistency.
- Step 5 – In-plant control
- Step 6 – Inside battery limit treatment (ISBL), resource recovery of valuable materials
- Step 7 – Outside battery limit treatment (OSBL)

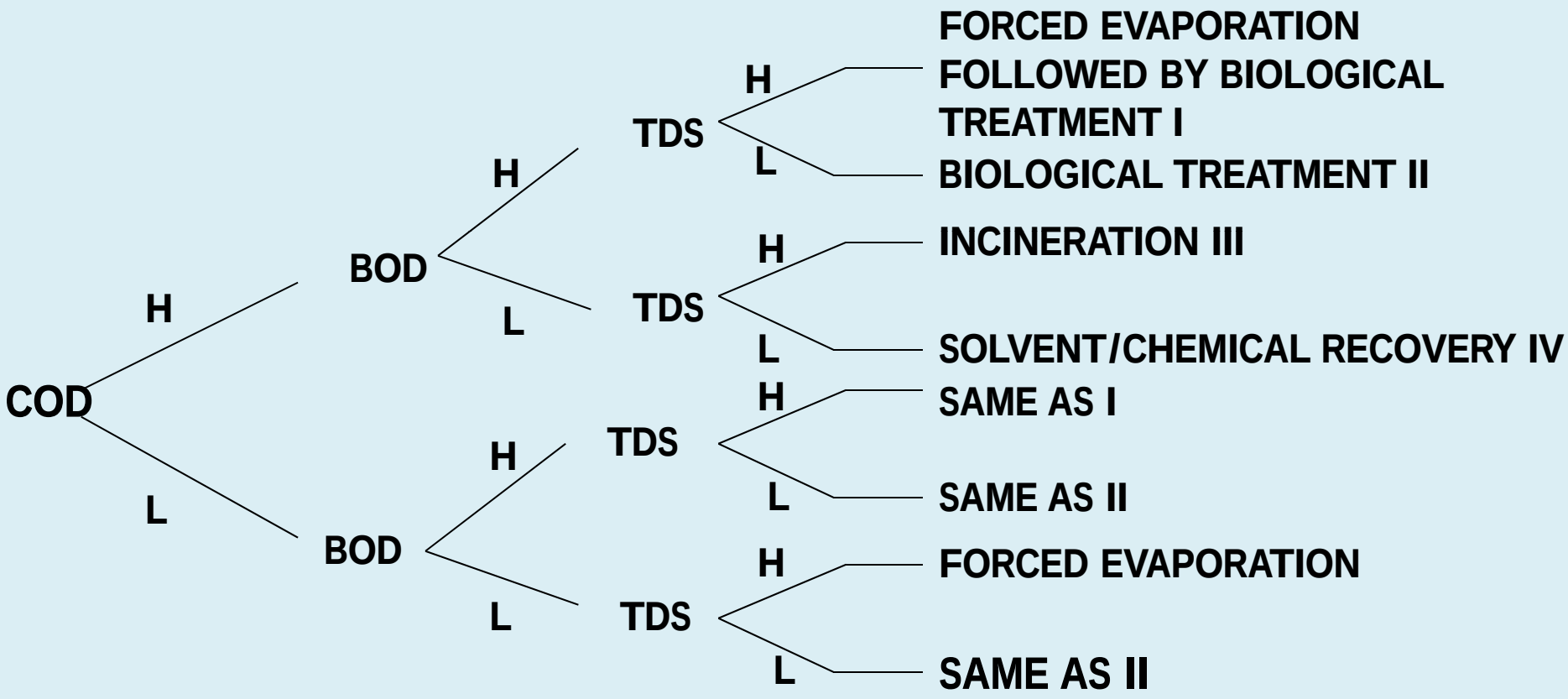
Mass Balance Of Water Consumption And Effluent Generation In Industries



TDS, BOD, COD RELATIONSHIP



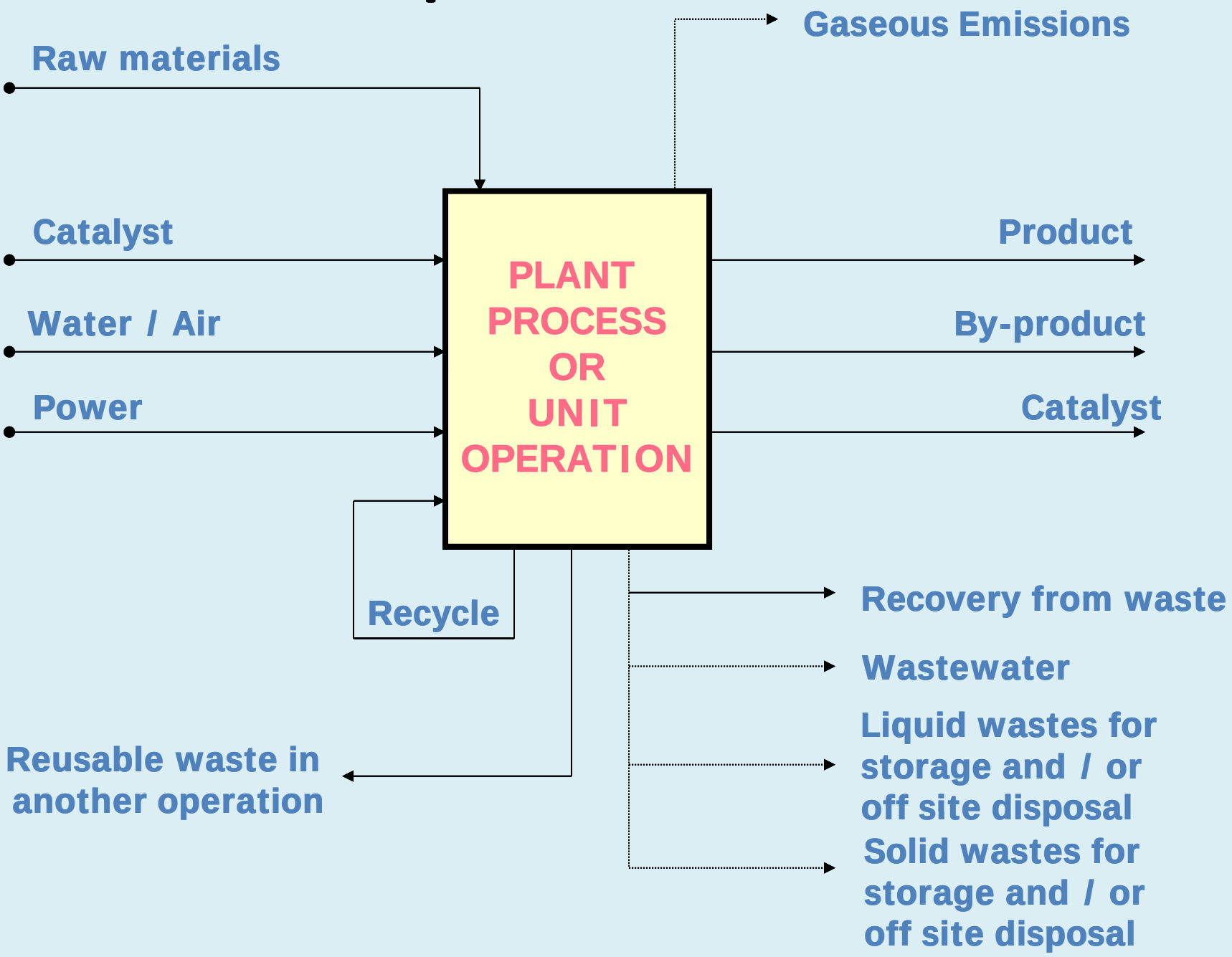
Stream wise Best Practicable Technology In Water Treatment



Unit Operation & Unit Processes

Type of unit processes	Type of unit operations
Alkylation	Liquid/liquid extraction
Carboxylation	Liquid/liquid separation
Acetylation	Liquid/solid separation
Condensation	Gas/solid separation
Cyclization	Distillation
Dehydration	Crystallization
Halogenation	Gas absorption
Oxidation	Drying
Sulfonation	Grinding
Nitration	Mixing
Amination	

Pictorial Representatio Of Balance



Identification Of Waste-water Streams
Captan – A Case Study

- Step 1 – **Chlorination** of Carbon Disulphide

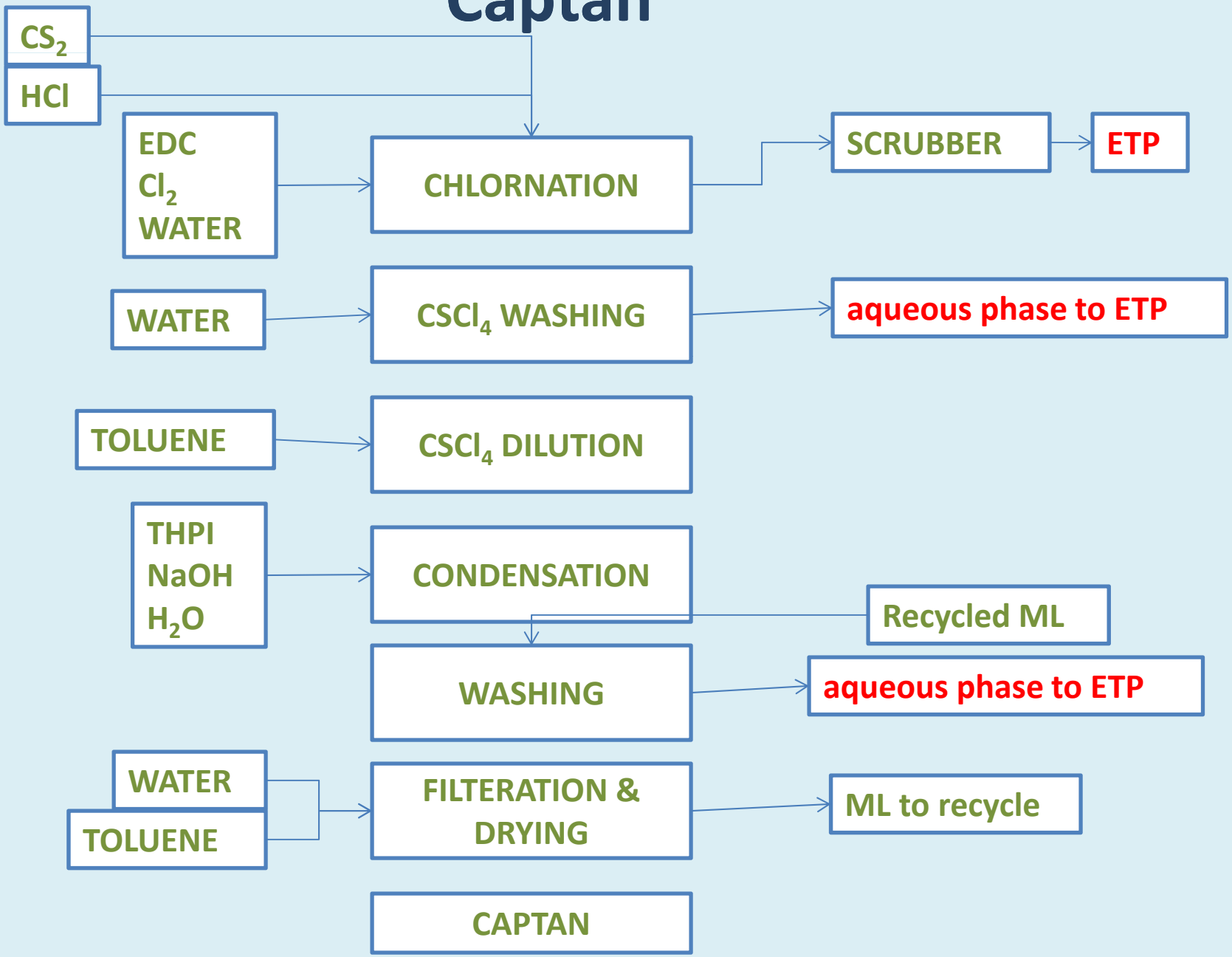
$CS_2 + 6HCl + 4H_2O + 5\ Cl_2 \rightarrow 6HCl + H_2SO_4 + 6HCl + CSCl_4$

- Step 2 – **Washing & Dilution** of **$CSCl_4$**
- Step 3 – **Condensation**

$CSCl_4$ + NaOH + Tetra Hydro Pthelic Amide → Captan + NaCl

- Step 4 – **Washing**
- Step 5 - **Filtration & Drying**

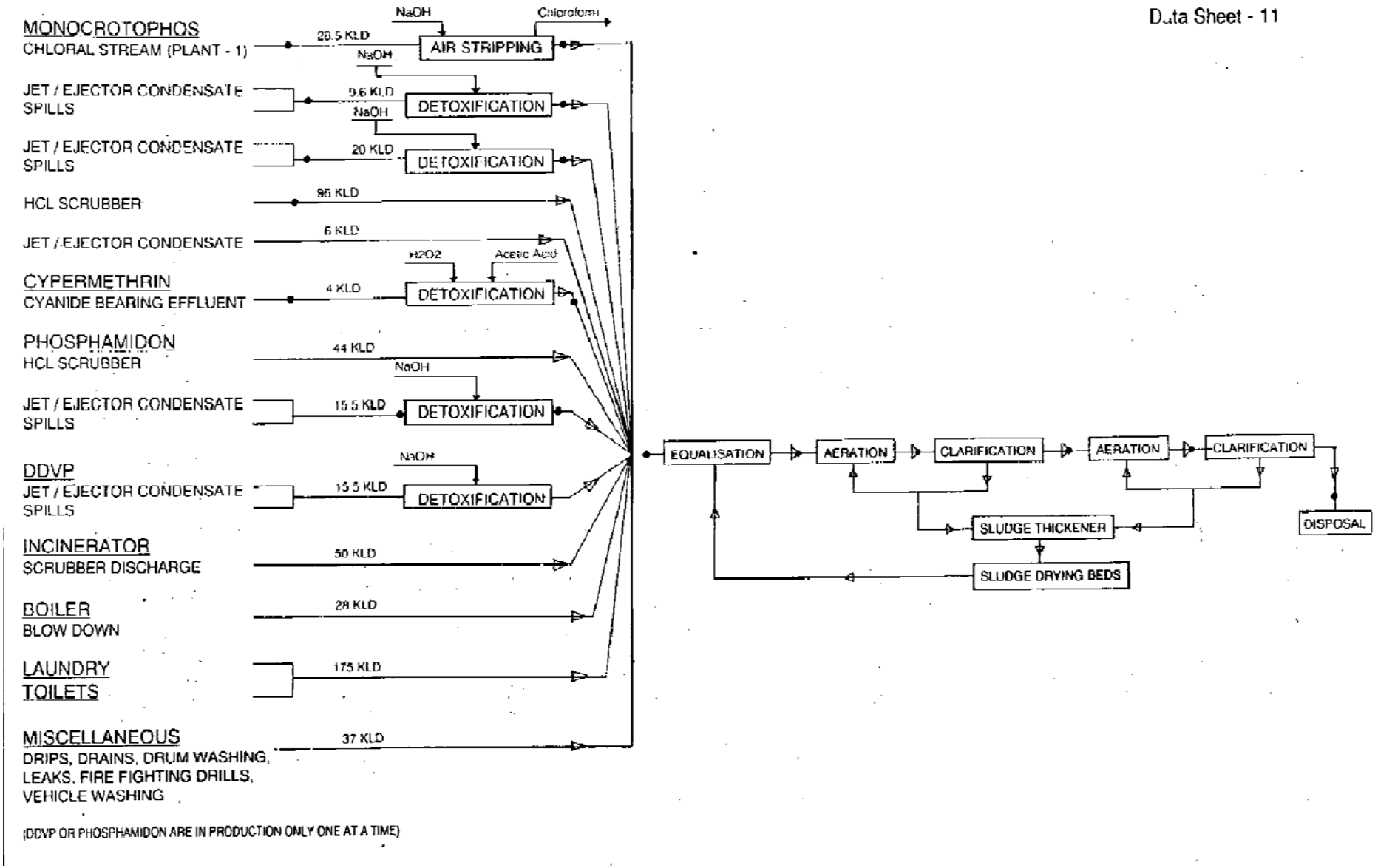
Process Flow Diagram For Manufacturing Of Captan



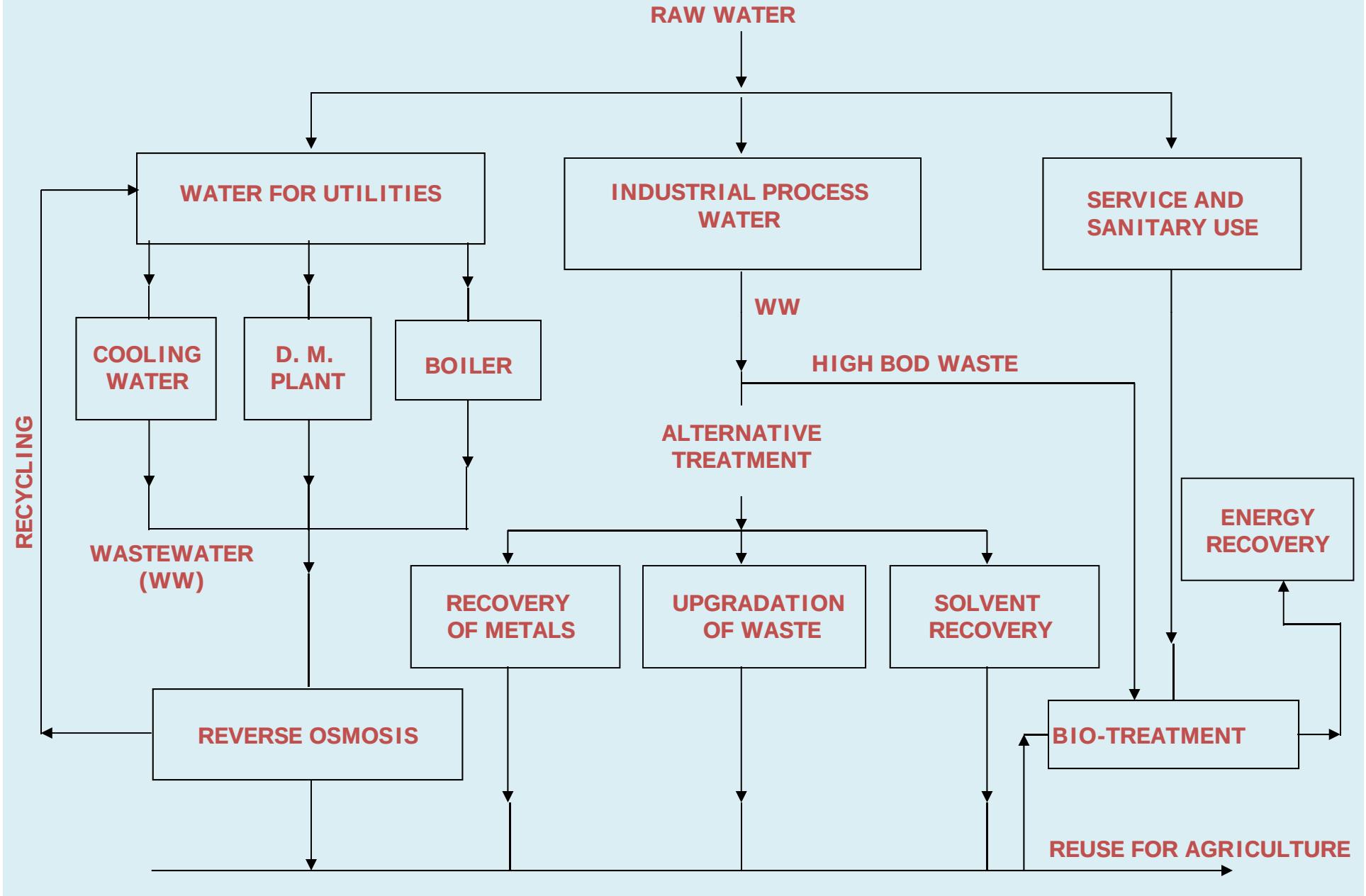
IN-PLANT CONTROL

- Good house keeping is the least expensive means to reduce the overall burden on treatment and disposal.
- Loss of raw material, solvent and product can be restricted by installing monitoring devices.
- The steam jet ejectors and barometric condensers can be replaced in some cases by vacuum pumps and surface condenser systems.
- Waste segregation and treatment also form an important step in in-plant control of pollution.

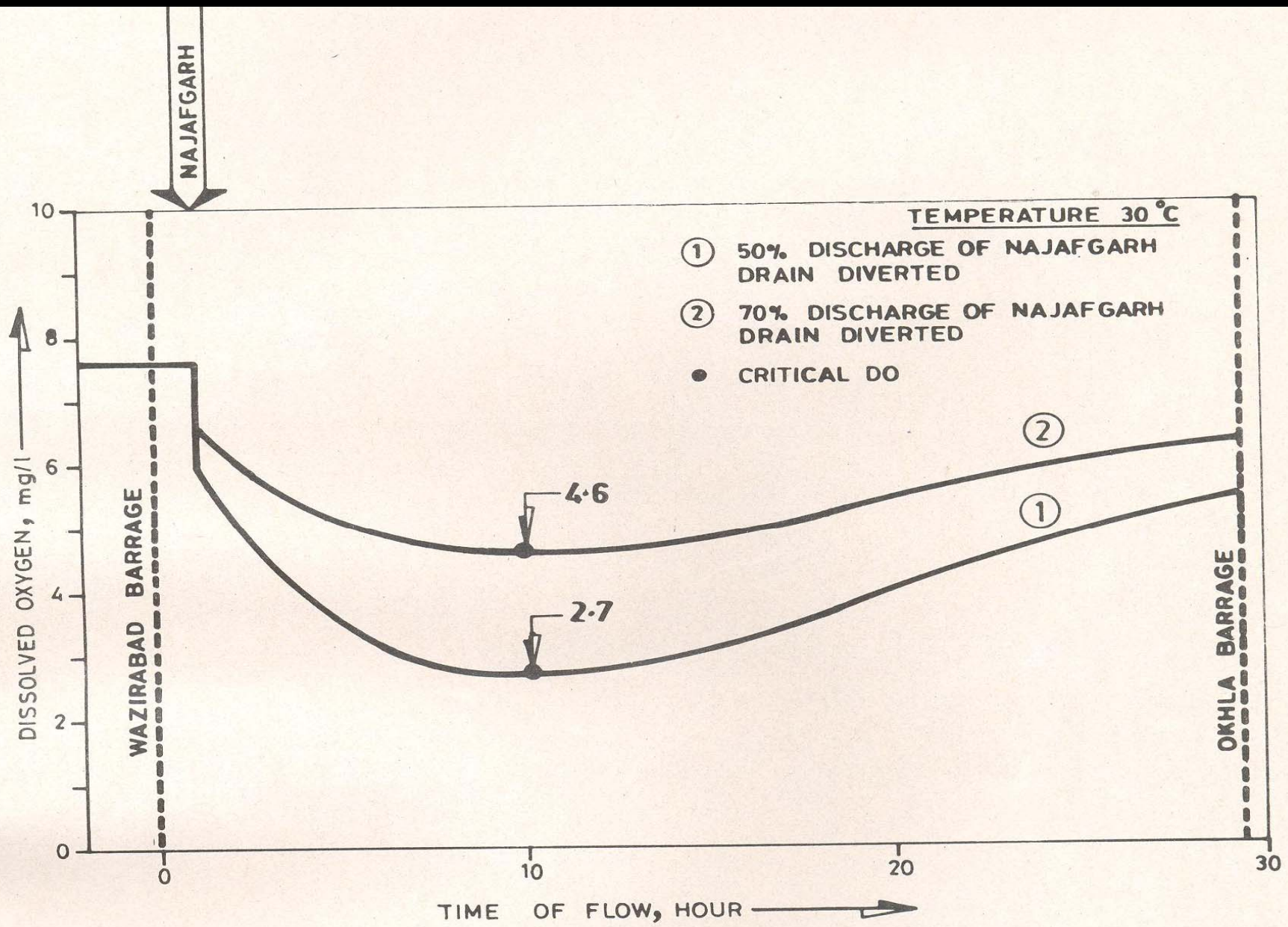
ISBL & OSBL Treatment Of Organic Chemical Industry



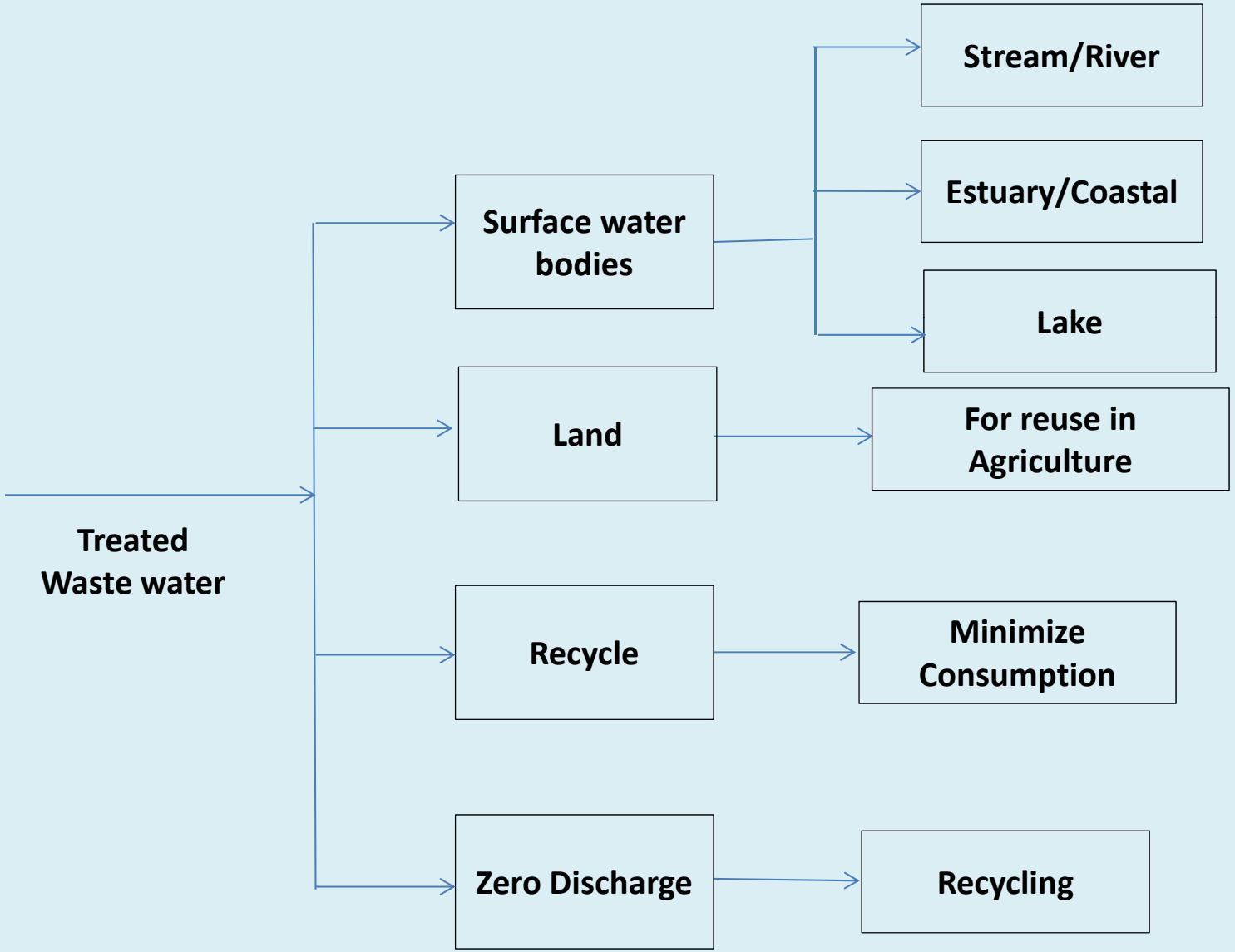
4 R In Industrial Wastewater



Predicted DO Profiles For Reduced BOD Load



Disposal Option For Treated Waste Water



Definition Of Outlet

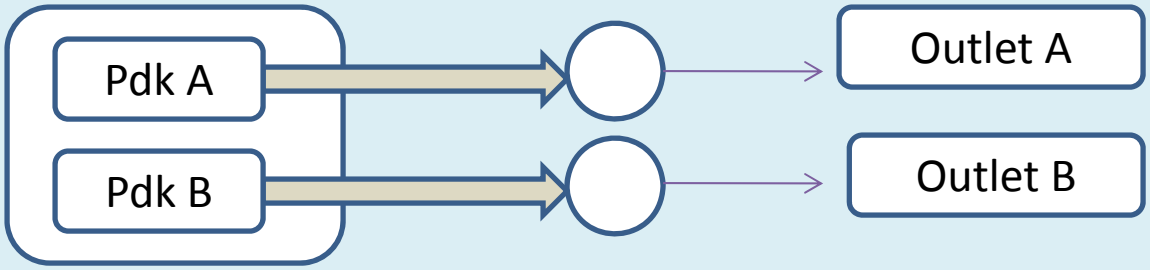
- “**Outlet**" includes any conduit pipe or channel, open or closed carrying sewage or trade effluent or any other holding arrangement which causes, or is likely to cause, pollution.

Outlet Conditions

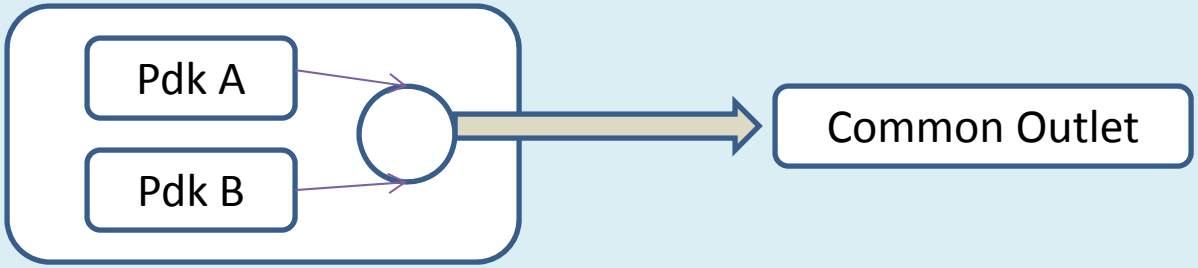
- Proper channel
- Provisions for sampling
- Installation of flow meter/ V-notch
- Automatic Monitoring Devices (optional)
- Discharge to river through diffuser

Option And Choices For Granting Consent To Combined Outlet Or Multiple Outlet

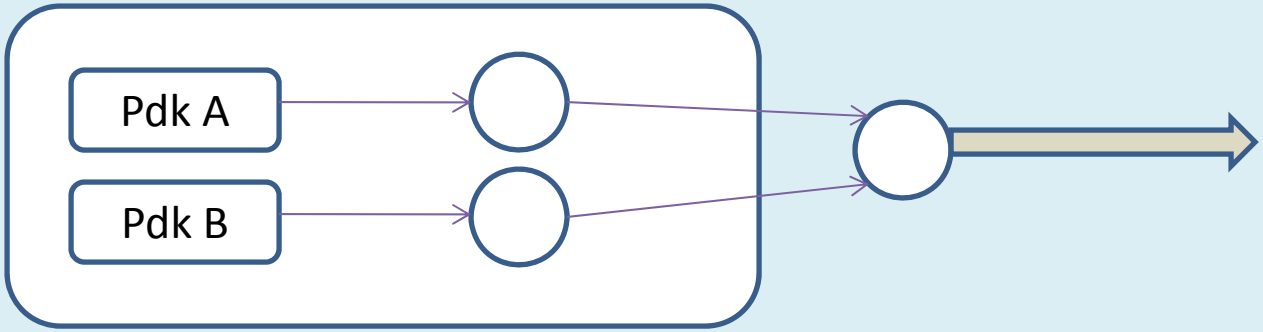
- Multiple product with multiple outlet



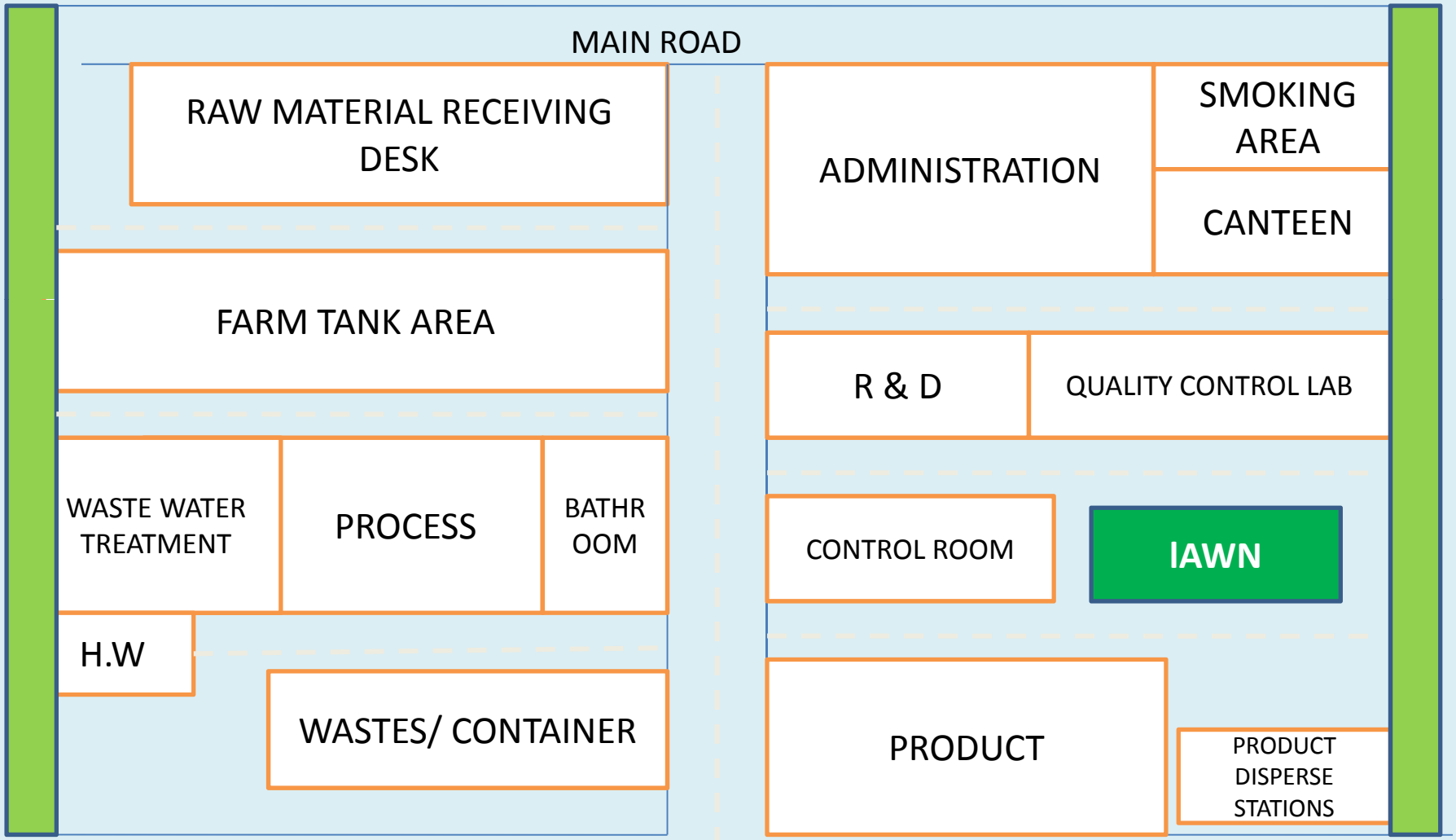
- Multiple products with combined single outlet



- Separate outlet with separate products, common outlet



Layout Plan


MAIN ROAD
RAW MATERIAL RECEIVING DESK
FARM TANK AREA
WASTE WATER TREATMENT
PROCESS
BATHR OOM
H.W
WASTES/ CONTAINER
ADMINISTRATION
SMOKING AREA
CANTEEN
R & D
QUALITY CONTROL LAB
CONTROL ROOM
lAWN
PRODUCT
PRODUCT DISPERSE STATIONS

Factors Governing Green Belt

The factors governing green belt development according to the guidelines are stated below:

- Sensitivity/ tolerance to pollutant
- Habitat
- Height
- Growth rate
- Regeneration
- Evergreen/deciduous
- Duration of foliage
- Flowering season
- Crown surface area/shape
- Leaf area
- Stomatal index

Raw Material Storage

- Preferably it shall be indoor with an impervious layer with well ventilation and natural and artificial light
- The chemical shall be stacked in proper manner and with sufficient elbow space
- The entire area shall bear a proper signage (Figure 11)
- Farm tank area shall be kept with containment so that any leakage or spillage can be identified, collected and properly reused. Utmost care shall be taken in order to avoid the abusing of storm water drain. Farm tank area shall be on impervious floor, so to prevent ground water contamination

Storage Of Raw Materials

Good Housekeeping

- Aisles – Wide enough for traffic movements, marked off by the floor lines from work position and storage areas
- Storage – Adequate and convenient space for materials and tools
- Materials Handling – Layout planned for material flow with efficient methods and equipment
- Ventilation – Good general ventilation plus local exhaust ventilation to remove air contaminants at the source.
- Floors and Walls – Of construction and materials that are easy to keep clean and in good repair
- Lighting – Well distributed artificial light and effective use of available day light
- Handling and Waste storage – Adequate storage (both satellite and off site) of waste
- Prevent spillage and leaks from loading and unloading
- Getting rid of dust and dirt

Facilities For Inspection

- Proper instructions at the gate
- Organizations of information, relevant papers, results of the self regulation and make them available at the time of inspections
- Action taken reports with respect to instruction given by the authority on compliance
- Organizing meeting with all stakeholders of the company (departmental heads) along with the inspectors
- Updated drawings, layout plan etc.
- Supports reconnaissance survey, sampling programme

Self Monitoring Protocol And Reports To Pcb

- Organizational and policy
- Pollution assessment – monitoring data and management
- Waste minimization
- Transparency and report writing

NOTING & DRAFTING

Five States Of Granting Consent

- Consent to establish for fresh application
- Consent to establish for expansion
- Consent to establish with products change
- Consent to operate for fresh cases
- Consent to operate for renewal

Noting On Consent To Establish For Fresh Application

Sub: Consent to establish of M/s…….. industry to be at village……, Talukas……., District……, in the state of……

Where as the said industry has applied for establishment of the factory at said place……on dd/mm/yr

I. Where as the said industry is under red category, since it is an oil refinery with 7.50 MTPA, where all the relevant information submitted, reviewed/examined with due diligence along with EIA report, inspection made by regional officer (see Flag A). The observation emerged out from this review/examination are listed below:

II. Validity period – since the industry is large and complex in nature, validity period shall at least be given as 5 years. It is pertinent to mention that environmental clearance (EC) condition is given also for five years time

III. Site selection – The industry has submitted the plan/location map. It has submitted revenue/survey numbers, plot number, postal address along with Telephone/mobile/fax no. of the relevant persons. Industry is neither close to ecologically fragile area, nearly 5 km away from the high tide mark of coastal region. Neither it is located near a farm land (15 km away from a forest). The land clearance from local authorities are also attached herewith (Flag C)

IV. Land use and layout plan – It is observed that the industry will keep one third of the land vacant with a green belt around the periphery. The layout plan also indicates well planned zoning. The layout plan and land use given both at mapping in proper scale as well as with schematic drawing (Flag D)

V. **Water demand & water availability** – The industry has provided a water balance. It is observed from the data that the industry shall consume nearly 1012m^3/ton of product, out of which 306m^3/ton is recycled from treated wastewater. The industry shall discharge 197 m^3/ton effluent i.e. nearly 30 percent treated waste water shall be recycled. The source of the river which has a flow of 12 times more than required water demand in the fair weather (16.5 million m^3/day is refinery demand per day, but the water availability is 1600 million m^3/day and a good dilution also available for treated waste water). Detail water balance, water demand and water availability is given in Flag E)

VI. **Waste water treatment** – Waste water treatment scheme comprises both inside battery limit (ISBL), mostly oil recovery from various streams as well as comprehensive outside battery limit (OSBL) treatment. The OSBL treatment comprising dissolve air floatation techniques followed by secondary dissolve air flotation technique followed by secondary biological treatment. The secondary treated water is subjected to treat elaborate tertiary treatment such as sequential batch reactor, followed by ultra filtration and reverse osmosis (Flag F) before discharging or recycling. This elaborate treatment is expected to meet the standard. This has been examined through COINDS document of CPCB and BAT document of European Union. It is observed with the national and international norms for treatment of waste water (Flag G)

VII. **Self regulation & Monitoring Programme** – It is reported that the company has well structured organogram both at corporate and operational level. The organogram has attempted to integrate the various organs on data sharing and synchronize administrative mechanism to take care of safety, health and environment management. A well designed monitoring network has been proposed taking care of characterization of waste water of every streams generating from each unit operation/process as the case may be. It also takes care of the characterization of combined stream of waste water before and after the treatment. This programme also includes the construction of an “outlet” consisting of free channel fitted with real time flow measuring devices and continuous monitoring devices of relevant parameters. There shall be a facility of collection of sample as and when require with respect to calibration and sampling due to third party regulation purposes. The undersigned proposed that, there shall be continuous monitoring station at the mixing zone of down stream of river. This station is also be included in national water monitoring programme in order to tke care of the interest of downstream user. It is pertinent to mention that there is no organise use of downstream. Detailed self regulation along with monitoring programme is furnished in Flag H.

VIII. Proposal for house keeping including maintenance of storm water drain – Applicant submitted the comprehensive house keeping programme which included signage, monitoring schedule of leakage, spillage at the relevant places, such as storage, loading/unloading areas, engineering shops. The company has also proposed leak detection and repair programme (LDAR) at the pumps, flanges, valves so as to arrest the VOC and loss of fuel.

It is also addressed the problem of storm water collection and disposal and avoid contamination through constructing containment at the farm tank areas. They also identified the area of possible contaminations and action there of (Flag I).

IX. Product and Raw Materials – As already stated, the refinery has the capacity of 7.50 MMTPA with the process unit capacity is as follows.

Sr No	Process	Unit Capacity (MMTPA)
1	Atmospheric distillation unit	
2	Merox unit	
3	Naptha hydrotreater	
4	Kero hydrotreater	
5	Vacuum distillation unit	
6	FCC	

The details of raw materials along with the composition is given in Flag J
In view of the above, it is recommended that the said industry may be consider eligible for granting consent to establish under Section 25/26 of water Act, 1974. The draft is prepared and submitted for approval of competent authority.

……Signature

……Name

……Designation

Model Draft For Consent To Establish

Order No……dated…….dd/mm/yr

To

M/s…….

……..

……..

Subject: Consent to establish under Section 25/26 of Water (Prevention & Control) Act, 1974

- Where as the said industry has applied for consent to establish duly filled in prescribed form of State Pollution Control Board.
- Where as the said industry has obtained environmental clearance from the competent authority (Annexure I)
- Where as the said authority has obtained clearance related to transaction of land from the competent authority/authorities (Annexure II)
- Where as the SPCB examined the information provided by in the said form
- Where as the SPCB conducted a field inspection and the field inspection report is examined (Annexure III)

Where as being examined with due diligence, the competent authority of SPCB is in the opinion that the said industry shall be considered as eligible for obtain consent to establish under the said section of the said act.

In view of the above, the undersigned being empowered by the board is pleased to grant consent under the Section 25/26 with the following conditions:

a) The validity period of consent shall be five years from the date of issue of this letter. If the industry fails to establish, the industry may apply for extension of validity period for six month before expiry of this consent, provided that the industry shall obtain the extension of validity period from the competent authority of environmental clearance.

b) The industry shall be permitted to establish 7 MMTPA of crude refining with the process uit capacity as follows:

S. No	Process	Unit Capacity (MMTPA)
1	Atmospheric distillation unit	
2	Merox unit	
3	Naptha hydrotreater	
4	Kero hydrotreater	
5	Vacuum distillation unit	
6	FCC	

The storage of crude and product shall be constructed as per OIL INDUSTRY SAFETY DIRECTORATE and as provided by the industry in application form (Annexure I)

c) The industry has obtained permission from the state irrigation department (Annexure IV) to withdraw water from……river with 16 million m^3/day.

d) The total consumption is permitted to be 1012 m^3/ton of product. Out of which, 306 m3/ton shall be recycled and nearly 197 m^3/ton effluents shall be discharged. The consumption with respect to each activity is permitted as follows:

Sr No	Consumption with respect to each activity	Permitted quantity M^3/day (KL/day)
1	Cooling tower	
2	Boiler (including DM plant)	
3	Industrial process	
4	Services (including fire water)	
5	Sanitary	

e) The waste water is allowed to discharge is 197 m^3/ton. The detailed break up of waste water discharge

S. No	Waste water generation with respect to each activity	Permitted quantity M^3/day (KL/day)
1	Cooling tower blow down	
2	Boiler blow down	
3	DM water generation	
4	Waste water generated from industrial process	
5	Waste water generated from sanitary sources	

Note: It is directed that 30% of total waste water generated shall be recycled after treatment.

f) The industry shall install water meter/flow meter at the inlet point of each activity as stated earlier (point of …….), also at the total intake point with recording system and shall facilitate to inspection team.

g) The industry shall lay down close conduit to collect the waste water. In no circumstances, storm water drain shall be used to collect the waste water.

h) The industry shall construct an “outlet” with proper channel, fitted with V-notch and real time flow measurement devices. There shall be arrangement of “sample” collection and also real time monitoring devices with consented parameter.

i) Where as the treatment scheme both at ISBL and OSBL system submitted by the industry (Flag G) seems to be adequate provided subject to performance at the time of operation. At the time of construction, SPCB may be appraised, so that SPCB may inspect the construction, hydraulic testing etc and suggest there off.

j) The industry shall monitor the downstream of river at a point considering the mixing zone with a frequency of once in a month with 9 core parameters and 15 parameters once in three months during construction period so as to have adequate baseline data and appraise SPCB annually. The parameter shall be as per the national water quality monitoring programme.

k) The industry has submitted the scheme of self regulation (Flag H). The industry may start their self regulation even at the trial stage.

l) The industry shall apply for consent to operate six months before the commissioning.

m) The industry shall also ensure compliance with all norms laid down in environmental clearance

The SPCB however, has the power to withdraw the consent in case of non-compliance of any norms laid down by the Board.

Yours faithfully,

……..

Member Secretary


If you Salute your Duty,
You no need to Salute
Anybody,
But
If you pollute your
Duty, You have to
Salute Everybody
-Kalam
For more Quotes :

THANK YOU