


# EFFLUENT TREATMENT - A SOCIAL NEED

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e are in a developing economy. Endeavour for an all round development cannot be discouraged. Development without pollution is seldom possible. But we cannot afford any ecological imbalance at the expense of development. So we have to find out ways and means to keep up the ecological harmony at any cost.

Here we are determined to find out ways and means to control pollution due to the production of Crumb Rubber. An effective and efficient Effluent Treatment System has been developed and implemented in the Pilot Crumb Rubber Factory of the Rubber Board to prevent water pollution in and around the factory premises.

In PCRFB the effluent is treated and the clear water goes back to the factory for production work. The sludge separated from the effluent is found highly fertile and is being used as manure in the yard for vegetable cultivation.

Since not even a single drop of water flows out from the recycling line, there is no chance for environment pollution due to effluent. Even if the treated water flows out, it will not make any difference in the environment since all its parameters are within the limit.

Treatment is taking place in seven stages. They are the Rubber Trap, Composite tank, Aerobic Pond, Clarifier, Settling Tank, Sand Filter and Sludge Removal tank.

Here the endeavour is to popularise the subject and it is explained in a layman's point of view in simple poetic language.

## I. Crumb Factory : Is it a pollutant?

1. Economic development is essential no doubt,

Ecology but suffer not on its cost.

Ban on all attempts doesn't make wise,

Forget not we are still in the third world.

2. Desert the fashion to oppose the reason,

Think in the right way to bring up the fruit.

Shortcoming if any really means

Only the outcome of some activity.

3. Crumb rubber factory: Is it a pollutant?

Yes it is, if mismanaged.

But isn't the case for even your home,

With uncleaned toilet and even the stockings?

4. What is the effluent actually from crumb?

It is but nothing a degradable water.

How is the milk become curd and clear water,

After a night when bacteria act?

5. Take it so easy, let sound be your sleep!

Mystery revealed! Behold the sunrise!

Sludge from the effluent no more a pollutant

Highly fertile and brings you an income!

6. Sing all ye comrades the victory revealed,

The *victim* has become the *victor* indeed!

How wonder you see the  
rejected stone

Has now become the  
*Arch Capstone!*

## II. Factory Effluent

1. Factory effluent : a  
necessary evil,

During the process to  
transform the scrap.

Soaking and milling see  
pollute the water,

For all bearing nature, a  
maternal ache!

2. Scrap rubber: neglected,  
the name itself talks,

But transform the scrap  
is the need of the hour.

Toiling and moiling the  
small holder first,

Industry next, needs a  
stuff excellent.

3. For cleaning the cloth  
you soak it for hours,

Dislodging dirt is then  
made easy look!

Crumb Factory :  
someone called a  
laundry, right!

The difference is only the  
detergent nil.

4. Dirt of all sorts include  
mud and mill waste,

Oil and grease even  
fungus as well,

Pollute the water with  
unbearable smell,

And this is the effluent  
that factory gives out.

5. Untreated effluent is  
villain no doubt,

But fortune is ours, the  
structure is simple!

Degrading takes place  
when bacteria act,

Just like pure milk turns  
to curd and clear water.

6. Alas! I called you first  
villain sorry,

You are so because you  
took up the sin,

To transform the scrap  
into TSR great!

And to lift up the status  
of small holder too.

## III. Rubber Trap

1. Who named me a rubber  
trap look,

I am an ordinary water  
tank deep.

Mission for which I am  
put up behold,

Is to separate water from  
sediments and floating.

2. Builders have made in  
me two distinct walls,

First one is higher than  
overflow line,

Next one is just below  
water line see,

And sediments and  
floating are trapped by  
these walls.

3. Down in my belly starts  
digestion first,

Gas, turbulence,  
discomfort always.

Vomiting at times keeps  
me fresh for some time,

At last I sleep in a thick  
blanket self made.

4. Recover mill waste, well  
always good agree,

But veiling my blanket:  
what nonsense you are?

I do not want again to  
pollute the air,

By vomiting and spitting  
when I am disturbed.

(In Rubber Trap Mill  
waste is recovered from the  
effluent - Stage I)

## IV. Composite Tank

1. Effluent from different  
source may not be same

Efficient treat possible  
when they are mixed.

Composite tank indeed  
blend water well,

To make it so easy for  
treating up fine.

2. A cage is seen kept in a  
corner with mesh,

To screen out the mill  
waste and keep water  
clean.

Foot valve is put always  
inside the cage,

To pump out the water  
from composite tank.

3. Composite tank and the  
Rubber trap ditch,

Truly are sisters with  
common ailments!

Vomiting, spitting and  
even loose stool,

Gas! Admit them both  
in the aerobic pond.

(In the composite tank  
effluent is blended -  
Stage II)

## V. Aerobic Pond

1. Aerobic pond is the chest of the system,  
Oval in shape with a plinth in the centre,  
Volume of pond equals five fold indeed,  
The quantity of water that consumed per day.
2. What lungs to your body is aerator to effluent,  
Oxygen added by means of a rotor,  
Bacteria aerobic works on the effluent,  
And reduce to pure water and sludge.
3. Aerator splashes out the effluent hard,  
Torrent and turbulent see aerobic pond,  
Bacteria flourishes to eat up the dirt,  
To transform the water for using again.
4. Bacteria! the amazing warrior, a gift!  
The nature has bestowed it upon the earth,  
To fight with the filthy things that pollute all,  
And to keep up the surface for sustaining life.
5. Oil film spread on the surface sometimes,  
Suffocates bacteria even to death.  
See in the midst fixed a PVC pipe

Across, to scrape oil out from the ditch.

(In the aerobic pond the effluent is subjected to aeration and bacteria multiples - Stage III)

## VI. Clarifier

1. Degraded effluent from aerobic pond,  
After an exercise brutal and blunt,  
Goes to the clarifier calm and tranquil,  
Where sludge goes down fast and water comes up.
2. Sludge settled down contain bacteria full,  
An asset of the system that develop by itself,  
Cannot leave astray, but need back again  
In the aerobic pond to balance the count.
3. A recycling pump sucks up sludge and slurry,  
Right from the bottom look taperly built,  
And discharge it into the aerobic pond,  
Once in two hours-all timer controlled.
4. Settled sludge at the bottom sometimes,  
Float on the surface by gathering gas.  
But a periodic water spray upon the floating,  
Separates gas from the floating to sink down.
5. Output of clarifier, the liberated water,

However contain fragments of sludge,  
Needs further settling, filtering too,  
And fed to a settling tank for a few hours.

(The degraded effluent gets clarified and sludge settled goes back to the aerobic pond. Clear water goes out from the clarifier - Stage IV)

## VII. Settling tank

1. Settling tank contains compartments ten,  
Holds treated effluent but sludge settles down,  
One after another the compartments see,  
Water flows slowly through *middle way* style.
2. Whatever floating that gather on top,  
Is trapped out by using a bend pipe indeed,  
And output of settling tank only contain,  
Fragments of Sludge with the density same.
3. Degrading took place in aerobic pond,  
Clarifier separates water from sludge,  
Settling tank polishes water again,  
But a sand filter finally essential see.

(Degraded effluent is again subjected to settle down its sludge-bacteria multiples - Stage V)



## VIII. Sand Filter

1. Sand filter : knows everyone simple and fine,  
Conventional flow is from top to bottom.  
But inverted flow needs for treating effluent,  
Or else, the surface top clog in no time.
2. Back washing filter bed became an headache,  
Not only cost but the system involved,  
Water that washed back the filter bed see,  
Also was problem to dispose of rightly.
3. Periodic back washing based on a schedule,  
All automatic and timer controlled,  
Whole water used for the back washing now,  
Goes to the primary rubber trap fast.
4. Final compartment has fishes to grow,  
To see that the water is free from all worms.  
Fishes are happy and so also we,  
For they get their feed and we get fine water.
5. What are the buckets that hang on a bar?  
They are but nothing to control ball valves,  
Water when fill in the bucket at once,  
The ball valve gets open to wash back the bed.
6. Output of sand filter find clear water,

Suitable even for washing your mouth!

No water wasted a drop even see,

Pumped back to the factory for using again.

7. Again see bushes exposed to nature,  
Rooted in water to absorb the sludge,  
Forming of algae thus rightly controlled!  
And oxygen added an additional gift!

8. A self sustaining system all local made,  
Programmed and scheduled for proper action,  
May be the reason for all of the success,  
Grace of Almighty!  
Thank Him a lot.

(Treated effluent gets filtered in sand filter - Stage VI)

## IX. Sludge Removal

How will you remove the sludge from the system?  
Mud and sand bark pieces earth scrap as well,

A sludge drying bed was the answer so far,

But convention blushed!  
on the system non stop!

Sediments and floating that come in the trap,

Always need removal once in a while,

But degraded sludge see real a gift!

To sustain the system and fertile the land.

Reckon : the sludge is but bacteria cloud!

Lucky! the system that longed for, so great!

The nature has now truly bestowed upon,

To transform all filthiness as per the Will.

Throughout the system from bottom to top,

Bacteria needed to transform the dirt.

This is the order that nature accepts,

And need not be purged out it is 'the leaven'!

Rolling stone gathers no moss! Always true;

A non stopping system can how gather sludge?

Yet, excess of sludge if gathered in process,

Is done away simple with, system takes care.

A circular tank near aerobic pond,

Siphoned to feed from the latter always,

Gathers and settles down sludge slowly first,

But later, see come up and wipe out it fast.

Remember the sludge is the system life blood!

Precious high, waste not a drop even see,

Remove it only found essential see,

Or else keep quite, let the system sustain.

(Sludge gets removed automatically if needed - Stage VII)