

Episode 48

Disposing Waste: The Environmental Style

- Dr Manas Pratim Das

(This episode brings into focus the pressures on the society due to increased generation of garbage. It starts with a scene where the traffic is held up due to agitation against starting a new landfill. The episode proceeds to discuss sustainable methods of waste disposal. It insists on the need to reduce and reuse.)

Characters

Driver 1/ Driver2/Driver3/Passenger1/Passenger2/Passenger3/Police (making announcements)

Tarun/Varun/Surama (all villagers who organised the agitation)

/Rakesh (local school teacher in the village)

Farukh/Madhura/Nagesh (scientists participating in a seminar)

(A long queue of cars stands still on a busy road. Some cars are honking and drivers are spewing out angry abuses.)

Driver1: What the hell is this! Why are we being held up?

Driver2: All bullshit...who is the fool creating this chaos?

Driver3: Kick him off the road...dirty idiots!

(Murmur from the passengers.)

Passenger1: God knows when I can reach home. The whole family is waiting for me. The priest won't be able to start the puja unless I reach.

Passenger2: My mother is seriously ill. I am going to pick her up and admit in a city hospital. But...this is terrible...who knows when we will be able to move...

(There is an announcement on the loudspeaker from the police.)

Police: There is a road block set up by local residents. We are persuading them to lift the block but they have not agreed to our proposal till now. We cannot

assure you of any time limit by which the blockade will be lifted. Please bear with us.

(A fresh round of murmur is heard from the passengers.)

Passenger3: My friend informed me over phone that they have blocked the rail road as well!

Passenger2: Strange! They are making people suffer for what bogus reason...god knows!

Passenger3: My friend told me the reason. There is one huge landfill here. It must be around a kilometer from here. The administration has decided to open up another landfill adjacent to it. The local inhabitants are aggrieved over the decision.

Child: *(Asks passenger2)* What is a landfill papa?

Passenger2: *(Ignores the question)* But why shall we bear with their whims?

Child: *(repeats question)* What is a landfill papa...tell me na...

Passenger2: Shyam, a landfill is where all garbage is dumped. All the garbage that is collected from various places everyday are deposited there.

Child: What is garbage papa?

Passenger1: Oh not again! Stop your barrage of questions! Why did you come down from the car? Go back quickly.

Passenger3: Ah come on...he is just a kid. It is natural for him to ask. My son, garbage is what is not useful...things that you throw away. Like empty bottles, peels of vegetables...like that...

Child: I threw away my broken train yesterday. That is also garbage, uncle?

Passenger3: Of course it is. Now please go back to the car. Your mom must be concerned. Go now, go!

(Announcement on the microphone can be heard.)

Police: The road block has been lifted. We shall have to ensure that there is no further trouble. Please move slowly and do not try to overtake. Help us to maintain order.

(A round of cheers is heard from the stranded passengers.)

Passenger1: What a relief. Let us hurry up. Who knows when the situation might change!

Passenger3: Right. Let us move fast.

(Cars move slowly and the jam is cleared.)

(Instrumental music)

(Night hours. Sound of cricket can be heard. A few people huddled together are speaking.)

Tarun: We were successful in organizing today's blockade. But will that change the situation?

Surama: Yes, I want to ask the same question. Will the authorities listen? Will they stop this process of starting a new landfill?

Varun: What do you think sir? Are we doing anything wrong? Shall we go for another such strike?

Surama: Will that be legal Sir?

Rakesh: I can understand your worries. Look, we are not agitating for any personal gains. This issue of garbage disposal is linked to our health, our survival.

Varun: And our livelihood as well !

Rakesh: Definitely. So we are doing a Satyagraha remaining within the ambit of the law of land. Whatever we did today was symbolic. We have already written to the authorities about our concern and we believe they will understand our plight.

Surama: You mean to say that today's blockade was just to draw their attention?

Rakesh: Absolutely. We are committed to ensuring smooth passage of all people through this land. But we have a right to healthy living as well.

Tarun: Sir, I have never heard of anyone putting up some blockade because of garbage disposal. Are we the first to do so?

Rakesh: This is why I insist on reading the daily newspaper. It is not just the villagers like us that are agitated over garbage disposal. Look at the developed cities. Residents there are similarly troubled.

Tarun: Is it so?

Rakesh: Of course. Take Bengaluru. Such a beautiful city and our Information Technology capital.

Surama: What has happened there?

Rakesh: In recent times there have been reports of agitation by people living in highrise apartments. They have come out on the street to show their disapproval about garbage disposal in the city.

Varun: I watched on TV that there is some strict order about some lake.

Rakesh: I am so happy that you raised that point. In fact the National Green Tribunal cracked its whip on civic agencies responsible for maintenance of the Bellandur Lake. Add to this the closure notice served by the Karnataka State Pollution Control Board to ninety seven factories.

Surama: That is a huge step! Then we are not alone!

Rakesh: Of course not!

Varun: Landfills must also be causing hazards just the way we are experiencing it...

Rakesh: Yes those are turning into hazardous spots. Think of the Deonar dumping ground in eastern Mumbai. It is spread across 326 acres, with trash mountains as high as 30 metres, the equivalent of a nine-story building. It is the biggest of the city's three dumping grounds, and receives 5,500 metric tonnes of waste every day.

Varun: I see but why are you mentioning it in particular?

Rakesh: That's because in 2016 there was fire in that landfill and it spewed so much smoke that life came to a standstill for a couple of days in the adjoining areas.

Surama: That's frightening!

Rakesh: The Brihanmumbai Municipal Corporation had to shut down 74 schools run by it, as the smoke from the ground veiled the area causing breathing difficulties. The smoke was also visible in the image taken by satellites used by the American space agency NASA!

Tarun: Are we the only country to have such bad landfills?

- Rakesh:** Not at all. Landfills are a major problem in developed countries as well. Landfills pose a risk of leaking toxins and contaminating local water sources.
- Varun:** Really? Developed countries are facing the same problem?
- Rakesh:** The list of hazards is still not complete. Think of global warming! Landfills contribute to warming as well. One figure I distinctly remember. In 2008, U.S. landfills released 30 million metric tons of methane. Every scientist knows the warming potential of greenhouse gases.
- Tarun:** See, there are so many sad examples to show that bad dumping habits could be so harmful. Yet, people are not listening!
- Surama:** Listen to me sir. Suppose there are no landfills. Ok? No landfills...nowhere. Then where on earth would the garbage go?
- Varun:** That is not for us to think. We won't allow trash from others choke us to death. That is all we understand!
- Rakesh:** Patience Varun, have patience! Surama has posed a logical question for us. There is no point in getting agitated over that.
- Varun:** But why should we trouble ourselves with such questions? We do not run the country or a state. It is for the leaders and administrators to decide.
- Rakesh:** I think you are wrong on this count. The solution to a problem is best when it comes from people at the grassroots, from us! Why Tarun?
- Tarun:** I am trying to follow what you are saying but I can't think of a solution. Whenever I go to the city I find the amount of trash occupying large spaces. In fact it seems to me that the amount of trash is growing by leaps and bounds.
- Surama:** Tarun is not wrong. Our village roads are also remaining littered with waste all through the year. We have very little number of shops here. Yet the amount of trash those are generating is quite sizable.
- Rakesh:** There is no denying that the best solution to the garbage problem is to produce as little of the same as we can. But our civilization has failed in this area. Trash is simply increasing. In fact it is increasing at a rate that is far more than the rate of increase of population.
- Surama:** That is why I ask about an alternative to landfills.

Rakesh: It would be easy to give you a slogan with three R's – reduce, reuse, recycle. But that will not answer your question. I am going to tell you about a seminar where I took my students last month. We happened to listen to some serious discussion on waste management.

(Flashback music fades in rises and fades away.)

Farukh: Mr Nagesh, we are enriched by your lecture. But do you really feel that the methods you mentioned can help us?

Nagesh: Mr Farukh, these are not my methods. These have been advised the US Environment Protection Agency or EPA! Shall I repeat those?

Farukh: Please do.

Nagesh: The EPA requires all new landfills to include a leachate collection system. Re-circulation of leachate accelerates the decomposition of solid waste.

Madhura: I do not have an idea about this system. Could you elaborate please?

Nagesh: Leachate is liquid generated from rainfall and the natural decomposition of waste. This is filtered through the landfill to a leachate collection system. The leachate collection system's job is to direct the leachate to collection sumps so it can be properly removed from the landfill.

Madhura: I see. What are the components of this system?

Nagesh: The leachate collection system is designed with a minimum 2 percent slope to drain to collection sumps. The collection sump consists of an HDPE riser and submersible pump. Leachate drains to the leachate collection system, where it is transferred to a central collection pump and piped to an onsite holding pond.

Madhura: That is a pretty elaborate system! You have to invest additional money to have such a structure.

Nagesh: I agree but if we are at all worried about public health then we have to invest in this manner.

Farukh: You were talking about capturing methane.

Nagesh: That is again a very good idea. Methane gas produced during decomposition can be captured to generate electricity. I have one statistics from Yolo County, California. There a landfill releases 14 lakh cubic feet of gas a day used to generate electricity. I am sure we could replicate the process here also.

- Madhura:** Could you tell me what landfill mining is? I once heard the term but I am not sure what it means.
- Nagesh:** Landfill mining is a process that is used to reclaim the materials of the landfill for other purposes. More than 65% of the product from a landfill is usable soil. Small percentages of other materials, such as rock, metal, wood, aluminum, glass, plastic, polystyrene, and other items, can also be extracted from a landfill that is ready to be closed.
- Farukh:** You are ruling out incineration of waste totally?
- Nagesh:** Please do not put words in my mouth. I am not rejecting incineration or controlled burning of waste but as we all know, incineration has several problems associated with it. So I would not advise the same for just any case. You have to take such decisions intelligently.
- Madhura:** I am not very clear about incineration. I can understand that it is controlled burning. But I wish to learn more.
- Nagesh:** Ok. Incineration is basically a waste treatment technology, which includes the combustion of waste for recovering energy. Among waste-to-energy technologies, incineration stands taller. Other technologies are gasification, anaerobic digestion and Pyrolysis. Sometimes Incineration is conducted without the reason for recovering energy.
- Madhura:** So why do we find people raising objections to incineration?
- Farukh:** I can chip in here with some facts.
- Madhura:** Please do.
- Farukh:** In the past, incineration was conducted without separating materials thus causing harm to environment. This un-separated waste was not free from bulky and recyclable materials, even. This resulted in risk for plant workers health and environment. Most of such plants and incinerations never generate electricity.
- Nagesh:** Incineration reduces the mass of the waste from 95 to 96 percent. This reduction depends upon the recovery degree and composition of materials. This means that incineration however, does not replace the need for landfilling but it reduced the amount to be thrown in it.
- Madhura:** (Laughing) So we are again back to landfills!
- Farukh:** I am not finished with incineration yet.

Madhura: Oh I see. Please proceed.

Farukh: Incineration comes with a number of benefits in specific areas like medical wastes and other life risking waste. In this process, toxins are destroyed when waste is treated with high temperature.

Nagesh: Incineration or thermal treatment of waste is much popular in countries like Japan where there is scarcity of land.

Madhura: That is quite logical!

Nagesh: The energy generated by incineration is highly demanded in countries like Denmark and Sweden.

Farukh: Other than Denmark and Sweden many European countries are recovering heat and electricity from waste.

Madhura: So incineration is not that bad. But it still cannot remove the need for landfills.

Nagesh: (Laughing) You got it so correct!

(Music brings the scene back to the village.)

Surama: So landfills will always be there! No respite from it.

Tarun: So it seems.

Rakesh: But we can make landfills better. There is no doubt about it. Moreover, there is no justification for claiming huge areas for landfills at will. The administration has to be circumspect.

Varun: I sometimes think if we could take the waste away from our planet....might be into space....I don't know...is that possible?

Rakesh: Well, the idea has its merits. But there are just two problems: humans produce an enormous amount of garbage; and rocket launches are extremely expensive.

Varun: (Laughs) So, no relief that way?

Rakesh: Even if engineers could bring down prices by a factor of 10, it would still be thousands of dollars to launch the garbage into space.

Surama: No point in imagining fancy methods. We have to find earthly solutions for our problems.

Varun: And that asks for reducing waste.

Surama: We hear so much about recycling. Isn't that helpful? Or are we actually too lazy to implement the scheme of recycling?

Rakesh: Of course it is helpful. Take for example the case of paper. Recycled paper produces 73% less air pollution than if it was made from raw materials.

Tarun: Really?

Rakesh: There are other pointers to impress you. Like, one recycled plastic bottle would save enough energy to power a light bulb for 3 hours.

Varun: Interesting!

Rakesh: There is more. 1 recycled glass bottle will save enough energy to power a computer for 25 minutes.

Tarun: So why don't we recycle everything?

Rakesh: That should be the ideal scenario. But debates have often been raised as to whether the costs of recycling outweigh the benefits.

Surama: And what is the decision?

Rakesh: The verdict is still in favour of recycling. But there is another good alternative to recycling.

Tarun: Alternative to recycling? I thought recycling is the only alternative.

Rakesh: You are wrong. An alternative to recycling that almost always appears to be the cheaper option is reuse. Reusable containers only have to be manufactured once for hundreds or thousands of uses. The energy cost between uses is approximately that of cleaning the container with soap and water, a negligible expense compared to sorting, melting down, and pouring the material into a mold again, for example.

Surama: We are already doing that sir! What is so novel about this?

Rakesh: Nothing. But we have to teach this good habit to everyone who is driven into believing that each item should be thrown into waste basket after a single use.

Surama: So that is a smart way of reducing waste!

Rakesh: And a very effective way of reducing the need for landfills.

Surama: It's getting late. We all need a good night's sleep before we can start spreading good habits!

(Everyone breaks into laughter. Jolly music fades in.)