Integrated Waste Management for a Smart City
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Module-04 Lecture-16
Waste Management Rules 2016

Okay. So let us get started with the week 4 material now. So far we have finished week 1, 2 and 3 and we also have posted the online quizzes which I hope that you must be taking. And as you know to get the final certificate of this course, you need to do the quiz as well as the exam if you are interested in the certificate.

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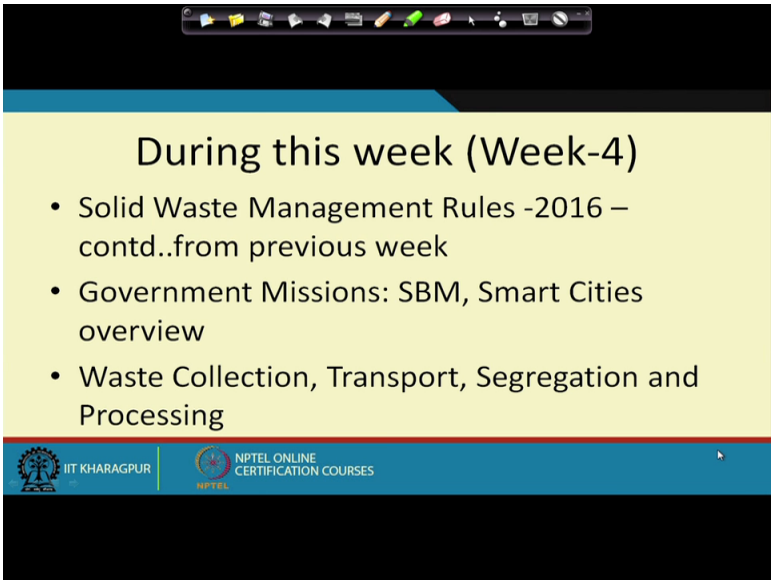

So for the week 4, as we have been talking about this municipal solid waste management rules and we have been also looking at other, we have to look at the other programs that mentioned earlier in during the week 3. So in this particular week, we will continue our waste management rules discussion. Wherever we left in the previous week, we will continue that and finish it. Then we will work on the Swachh Bharat Mission, the Smart Cities, little bit of overview of that and then while getting to the waste collection, transport and segregation.

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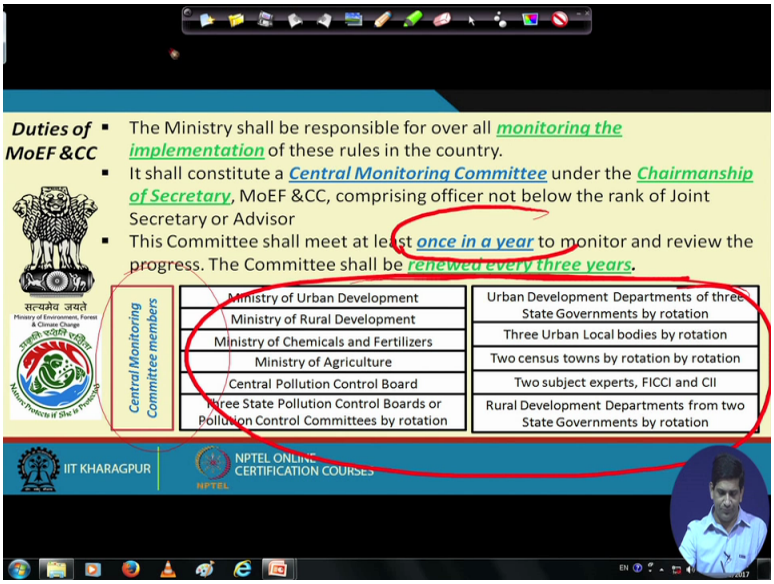

So let us start from where we left in the previous week. So if you remember this was the last slide of the last module, we were talking about what are the different responsibilities of the different ministries and the different regulatory bodies. So here we have the central, in terms of the Swachh, in terms of the municipal solid waste management rule, we have the central monitoring committee. Members will be, it must be formed, the committee will meet once in a year and they will look at how these things are being implemented. And then the committee will be renewed every three years and these are the places where the committee members will come from. This was what we discussed towards the end of the last module.

So let us continue the discussion from there. So once we have this committee being formed and there are different, this is part of the duty of Ministry of Environment, Ministry of Environment, Forest and Climate Change. As you may know the name of the ministry has changed recently, so it is now includes in Ministry of Environment, Forest as well as Climate Change. So this, we were talking about this committee.

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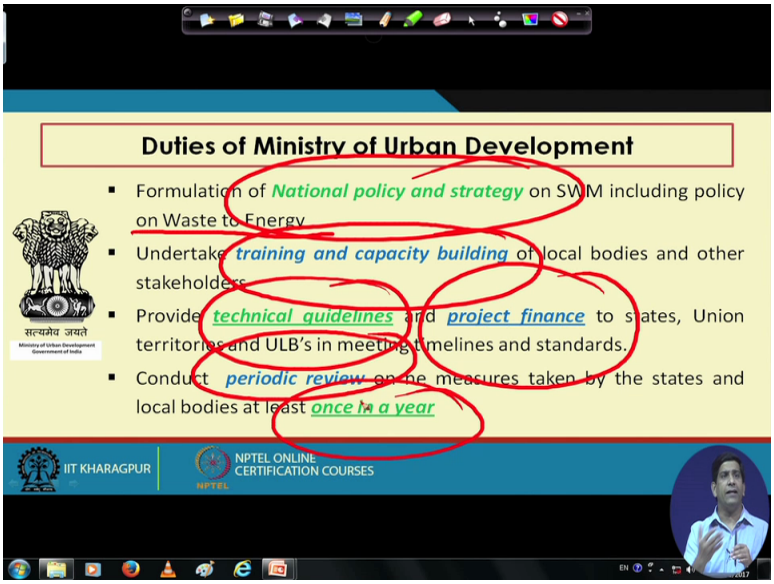

And then there are other, there are different stakeholders, so there are, so in the Municipal Solid Waste Management Rules 2016, for each and every stakeholders the duties have been specified. So in terms of the Ministry of Urban Development, they have to, they are kind of having that national goal, national role. So they have to do this national policy and strategy. So they will be responsible for the national policy and strategy of the solid waste management including looking at the waste-to-energy.

Waste-to-energy again, this is the concept of waste-to-energy is India is coming. One of the earlier people were talking about that since we have the energy crisis and we need lots and lots of energy for our industrial activity, for our houses and all, and waste could be a potential source of energy. But that is true but at the same time, what is happening is if you look at the waste components as you have seen in week 2 material, there are paper, plastic, those are the ones which actually have the high calorific value.

And in the Indian context, unlike in the western world, in the Indian context, what happens is this paper and plastic is already taken away by the kabadiwalas from our houses. We actually do not throw them away, most of us do not. Some may be, some part of the population may do, those especially on the higher income class, they who do not really care about those small pool of money coming to their household budget. But since, if they do not take it out, the rag-pickers

usually take it out from the secondary collection point. So the stuff that goes into the landfill as we say today essentially it is the dump.

The stuff that goes to the dump today, if you go and look at the calorific value of that waste which is coming to the dump, they do not have much calorific value as such. That is why the where you do the sampling, that is why the data collection as I was trying to tell in the previous week is very, very important. We need to look at the real data, not the data from the each houses where the amount which is going to the rag-pickers or the amount which is going to the kabadiwalas are all included. That will give us a wrong picture.

And then what happens is since we do not have the source separation, our C&D material gets mixed up, our leaves gets mixed up, our street sweeping gets mixed up. So that also dilutes the calorific value because these things does not have any calorific value as such. So ultimately our calorific value gets very, very small for the material which is coming to the dump site today. But still then there are, the newer technologies are out there which can work, potentially work with some of these low calorific value waste material. But we need to be careful to find out whether the technology is really going to work. That needs a critical evaluation, that needs a lot of technical evaluation before we invest crores and crores of rupees in these waste-to-energy plants.

I am not saying it cannot be done, I am saying that we need to look at it in a, we should have the correct data collection and at the same time we should look at it in a very thorough investigation and feasibility study needs to be done before we go for a full scale waste-to-energy plants because Indian waste still has a very low calorific value. And then it is kind of reflected in the (waste) these MSW management rules as well.

It says that anything you need to have at least 15,000 or 16,000 kilocalories per kg. So that is the calorific value it is suggesting. If you have more than that, you can go for waste-to-energy. Otherwise, you cannot. So then what are the other roles of Ministry of Urban Development? They have to look at the training and capacity building, so that is a very, very important and that is where institute like us, IITs and NITs and other engineering colleges around the country are also can contribute to the part where, and in fact, this course itself is kind of training and capacity building.

This is I think one of the very few courses which is looking at waste management, especially after all this recent event that has taken place in last two, three years with Swachh Bharat Mission and like Smart Cities and all that where probably this is maybe the first course which is being offered. And the reason I offered it on online platform, so that it reaches to anyone whoever is interested. So this will help in training and capacity building, so the people start thinking waste management in a more technical way.

It is a very technical oriented area, it is not that anybody can go and do the proper job of waste management. That is unlike what, we have been trying to do that and we have been burning our finger. So it needs a good technical evaluation when we choose different technological options in terms of the waste management. But it, this course is kind of at the higher level for more for a policy makers, for graduate students, maybe undergraduate senior students; MTech, PhD those students will probably be.

But at the lower level also like ULB workers, municipal workers, the (rag) all the, even the rag-pickers, we need to get them training. We need to, probably Skill India Mission can help with that. So there is lot of training and capacity building requires in this area. And that is the, that comes under a duty of Ministry of Urban Development. As per the MSW rules then, it has to look at technical guidelines. It has to provide technical guidelines, it has to look at the project finance and then periodic review on what the measures have been taken at least once in a year.

So these are the works which has been highlighted for in terms of the municipal solid waste management rules. As I said earlier, as any rule when you read, it kind of gets little bit of boring. So what I have tried to do in this set of slides is just try to give you a nutshell so that at least you get gist of what is there in MSW management rules. So I will still encourage you to read the rules but at least go over this video few times so that you have a good idea of what is these rules I talked about. And I have tried to be as accurate as possible. If there is any mistake, let me know through the discussion board. So mistakes can happen sometimes, so feel free to let me know.

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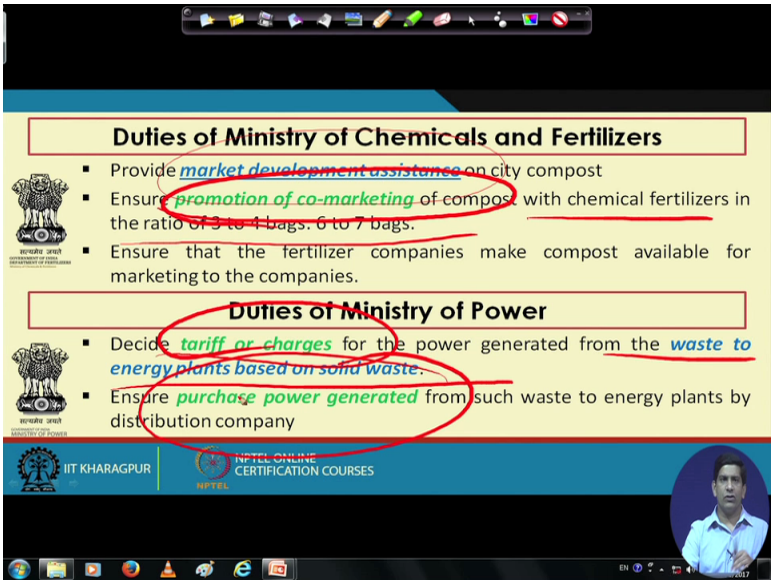

Then there are (depar) duties of Ministry of Chemical and Fertilizers where there is a, this, in terms of the compost again, I, on a based on my background and my expertise with the waste management, I defer with this part of the rule a bit and I will explain that. But what the rule says is this Ministry of Chemical and Fertilizers should provide a market development assistance. They do a market development assistance on city compost. So the city if they go for a compost, if they go for a compost plant assuming that there is a source segregation, without source segregation compost will not be of good quality, I think we all realize it by this time because we have made so many compost plants in India and most of it did not work out.

And the reason for that was it was unsegregated waste. If it is unsegregated waste with everything mixed up, it is very difficult to produce good quality compost. That is the bottom line. But even if the source separated compost, is a source separated waste, sorry and then if it goes to a compost plant, it will potentially produce a good quality compost if everything is done well. And we will talk about compost design, some of the basics of that as part of the course as well.

And as like we have done some compost design work in the past. But the reason in the city area especially in the say in the very highly urbanized area of Delhi, Bombay, Kolkata where the rural area is a bit far, if in that scenarios, say if we take the entire food waste of the urban area of for Delhi for that matter or Bombay for that matter and for say we take entire food waste of Bombay and make compost and of course the Ministry of Chemicals and Fertilizers are going to provide

some subsidy these days and that subsidy will help this compost trying to compete with other chemical fertilizers.

But again how long these subsidies will last? So there is always a, subsidies can get things started. But if we have to rely on subsidy forever, that is actually not going to work. And as of today, most of the places we are trying to get off the subsidy whether it is oil price, whether it is the LPG cylinder price. So why having subsidy for this sector where it would, we may give it today, we may continue it for 10 years. But at some point of time, we may decide that okay, no more subsidy can be given.

So in that case, whether it is economical viable, whether there is a market there, whether this, because in the urban areas, the compost can be, there is a very limited market. It can be bought from those household who are doing some house garden. The houses are also getting smaller, so there is not much space to do house garden. And at the same time, it can be used by city council and city, by different of its own parks and other places.

But other than that, if we take the entire food waste of Bombay and produce compost out of it, it is whether we will be able to sell it in Bombay or if I have to take that compost say 200 kilometer away, even 60 to 100 kilometer away, what is the transportation cost? We need to factor that transportation cost in there to find out whether it will be economically viable to have this kind of compost plant running for a long period of time.

Subsidy can get things started but subsidy is, should not to be, it is like a baisakhi, is not it? You are giving a, we do not want things to be on the support for all the time. It has to stand up on its own. So the alternative is there and that is also mentioned in MSW management rules, which is to go for this biomethanation or anaerobic digestion where you can possibly produce some gas and that gas can be used as a fuel source within the city itself.

And then the sludge will be much lesser and the sludge amount could be taken out for a compost away on the outskirts of the city. So that is that in my view is a more better option especially in the urban areas than going for compost from the source separated organics. But of course we can debate, we can do the math, we can do the like life cycle analysis costing and life cycle analysis environmental footprint to find out which one is better.

And those things should be done. And that is what most of the ULBs around the world in the developed countries are doing these days. They are looking at all the different options, they are putting all the different options on the table, what are the option A, B, C, D, E. I myself did a project for Toronto. Just outskirts of Toronto, there is area called Peel region which is Brampton, Mississauga and Caledon. I did help them with the study to find out, using LCA to find out which option will be better where they were looking at different options for their integrated waste management plan.

So there is a, there has to be a market. As per the chemical and fertilizer, there is they have a, given that it is there has to be market development assistance on the city compost. Then they are also looking at promotion of co-marketing of compost with chemical fertilizers. That is a ratio 3 to 4 bags, 6 to 7 kgs, that is also there. As part of that subsidy also it is, and ensure that this fertilizer companies make compost available for marketing to company. So basically having, using these fertilizer companies to market the compost. Again, we have to get this fertilizers company on board because compost is a competitor to this fertilizers company. So we have to see how they really get on board and help with that.

Then Ministry of Power, they kind of, they have been given the charge to decide the tariff or charges for the waste-to-energy plant based on the solid waste and then ensure that purchase the power generated so that this power generated from waste-to-energy plant should be purchased by the by these different electricity boards, by the grids and that goes on the grid. So that is their, that is the role of Ministry of Power.

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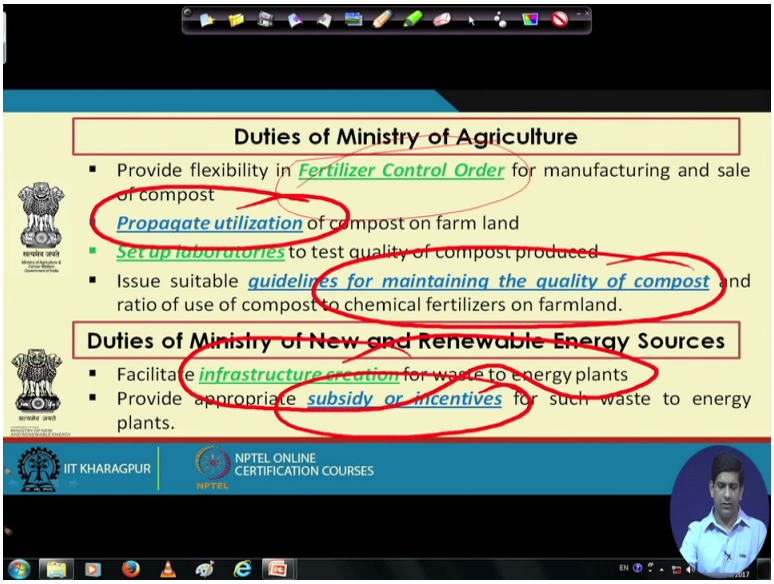

Ministry of Agriculture has, provide flexibility in the fertilizer control order. So they are being given this, control this fertilizer so that you can have more compost, propagate utilization of compost, encourage the compost usage. Compost is a good, it is organic fertilizer. But again at the end of the day, say if the cost of compost is very high as compared to the chemical fertilizer, although, see we all like environment, we all like, we all want to do good for the environment.

But say for example, if I am buying something, if I am buying the chemical fertilizers for 1,000 rupees a ton, just I am not I, it is just for an argument sake. If you are buying something at 1,000 rupees, the chemical fertilizers and the same amount of chemical, same amount of compost for the same area of land that you require, it costs say 1,500, 1,600, I may feel bad but still we will go for chemical fertilizers in the, I may go for compost once or twice but ultimately it is everybody's budget. Budget is very, very tight for everyone.

So at the end of the day, we will think that okay maybe I do not, I cannot afford this compost because it is too costly, so I will go for this fertilizer. Although we may also understand that long-term it is not good to use these fertilizers for a long period of time because it is not good for the soil or compost will be better. But see when you have the limited budget, people do not look at the long-term, people look at the short-term.

So that is the, that is where we need to make this compost competitive so that compost becomes almost at the same price as chemical fertilizers or we can or either come up some legislation to

do that. So there is a way to go along with that. In western European countries, they did that for some of these, to have less landfilling, more waste-to-energy. They had some things on the regulation, we will talk about that when we go to waste-to-energy plant chapter. But those things can be done here as well. So in terms of to get this industry going but at the same time, we cannot, again I will say we cannot subsidize the industry for a very, very long time.

And then Ministry of Agriculture will also look at the quality of compost, so that is there. So we have to have a compost quality check and the Ministry of Agriculture has been, is entrusted to provide the guidelines for maintaining the quality of compost. Then Ministry of New and Renewable Energy Source, they will look at the, facilitate infrastructure creation for waste-to-energy plants. For the WTE plant, they will do the infrastructure creation, appropriate subsidy and incentive for such waste-to-energy plant just to get the industry started. But again, like we cannot have subsidy for a long long period of time.

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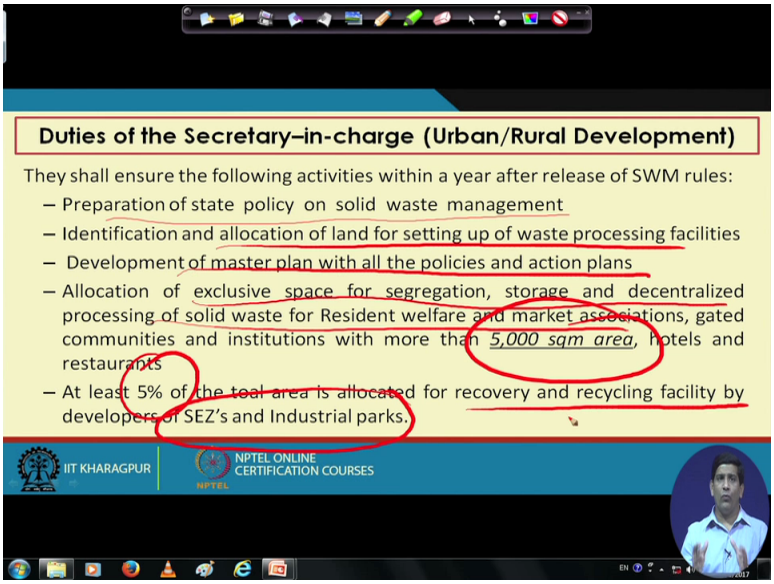

Then there is duties for the secretary-in-charge. You can, this PDF will be provided to you, so you can read this material by yourself as well. I will just try to highlight some of the key points here. What that secretary-in-charge will do? Following activities. After the release of MSW rules which is almost a year is already passed. So within a year, they are supposed to, some of this process might be already been underway. That within a year, they will look at the preparation of a state policy on solid waste management.

So identification and allocation of land which is always a very, very big problem. I was reviewing several DPRs from State of Bihar and some other places as well where we saw that although the DPRs have been prepared, in some places the land has not been identified because finding land is not easy. And but unfortunately, we do need land. Whether you go for compost plant, we go for waste-to-energy plant or landfill, land is required, so land is needed. So that is, so state is supposed to help in terms of the land.

Development of a master plan like a DPR kind of thing and allocation for exclusive space for segregation, storage and decentralized processing of solid waste for Resident welfare, market association, gated community, anything with 5,000 square meter area. And then at least 5 percent of the total area for SEZ, allocated for recovery and recycling facility. If you are doing SEZ and industrial park, you have to keep 5 percent of the area for recovery and recycling facility.

So these things are there. Thing is that how well we will be able to implement it. That is the main problem in many of our rules is that our rules are pretty good actually but implementation has been very weak over the decades. So how well we can implement that with all the constraint that we have, that will determine how successful this rule will be in coming time.

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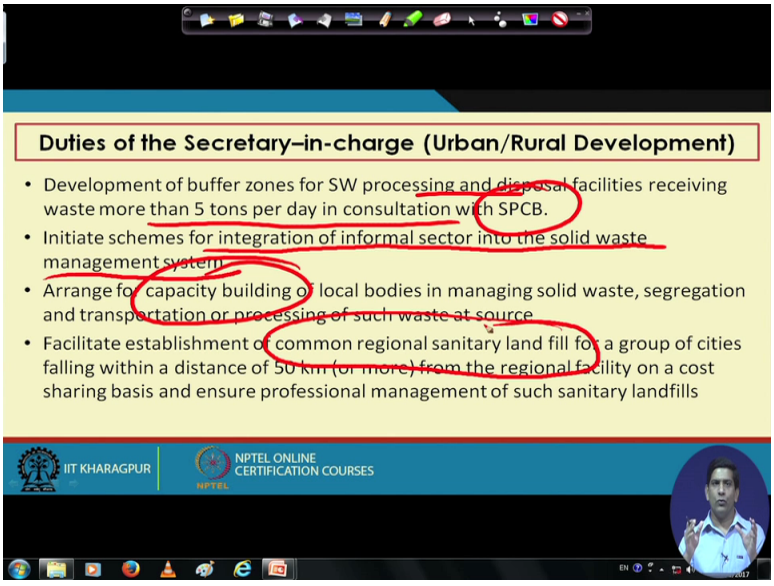

Then some other stuff, you have a buffer zone. So development of buffer zone for solid waste processing facility. If you have a more than 5 tons per day with and you do it with a State Pollution Control Board, then try to integrate, this is again very, very important, we have been

talking about that. Integration of the informal sector into the solid waste management system, that is a very critical part, trying to get this informal sector into the solid waste management system. And that is where this the new program of the Skill India or Startup India, those things can help there as well in terms of having this informal sector into the waste management system.

Then capacity building as I was talking about, we try to do capacity building in terms of not only in the training part, also as we have been talking in the last week to get, if you have to do the segregation, the infrastructure has to be there. Either we provide source separated like a two different bins to the household or we ask them to separate at their home and collect it in a source separated bin, source separated truck, transport it separately, then process it separately. So those things are important.

And then it also talks about having a common regional sanitary landfill. So that is really, it is at least one thing, it does understands which, unlike in some of the meetings or some of the deliberations you will go around and there will be some people who will say that we do not need any landfill, India will be a zero landfill. Unfortunately Germany and Netherlands, they are not zero landfill yet and they have been working on this for almost last 40, 50 years. So anybody saying that we will be zero landfill in few years from now is actually making a joke. It is basically not possible.

And those who know the subject matter will never say that. And MSW management rules does talk about that we need to have a regional landfill. The focus here is, as I was trying to explain in the previous video, the focus is try to have the, if in a nutshell, if you try to understand this solid waste management rules, it says that you do the source separation and wet, dry and household hazardous waste.

Household hazardous waste in my view can be collected once in six months or once in three months, it does not have to be collected every week. But wet and dry will be collected in a regular interval as many times it is done every day and maybe every alternate day they can be done as well but depending on how hard the area is. And then you get this wet and dry waste, do treatment of the wet waste, either do composting or anaerobic digestion as the case may be, generate recovery, do the resource recovery of that. Residual can, if it is anaerobic digestion, the

residual can go to compost plant. If it is a compost plant, the leftover, the rejects of the compost plant has to go somewhere.

If it is a good calorific value, it can go to a waste-to-energy plant. From the dry part, whatever can be recycled can be taken out. The other stuff, if it is a good calorific value can go to waste-to-energy plant. If not, it has to go to a landfill. So any rejects from composting, anaerobic digestion, waste-to-energy, there will be some residual. And that residual has to find a place in engineered landfill. We have to try to minimize the amount that goes to a landfill.

We may probably start with around 30 percent and then try to bring it down to maybe 15 percent, 10 percent over a 10 year, 15 year, 20 year period, but we do need engineered landfill. Whether we may be like it or we do not like it, but we do not have any other option at least for now. Even the western European countries which have been working on this waste management for almost four decades, they have not been able to completely get landfill free. So to think that we will be landfill free in few years is kind of, it is insane, I would say it is not true. And that is kind of thinking is what actually delays our progress in waste management. We are not realistic then. We have to be realistic and try to solve the problem. So let us, so that is for it.

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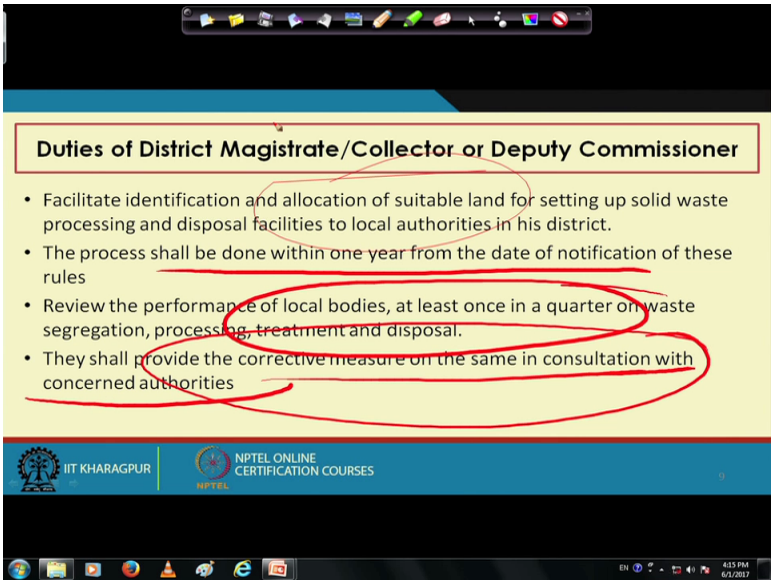

And then duties of the District Magistrate, collection or Deputy Commissioner: It is in terms of, it is facilitate identification, allocation for suitable land. So District Magistrate or the Collector or Deputy Commissioner has to help with finding the land, suitable land for setting up the solid

waste. So it says process has to be done within one year but it does not get done so quickly although some of the stuff there is a bit I would say they are being more optimistic to be to that.

But that is okay because if you try, there has to be a timeline given and that timeline does force people to act. If you do not give the timeline, people will be laid back. And if it is, cannot be done in one year, not a big deal, it can be done in two years or even in three years. That also it is not, nothing, it is okay rather than just waiting for another ten years and by not giving a timeline. So it is okay to have a timeline and then it is actually needed to have a timeline. So they did, in MSW Management Rules 2016, they did try to put timeline. Some of those timelines are a bit too, I would say too optimistic but it is okay.

And the process shall be done within one year. Review the performance of local body at least in a quarter and try provide corrective measures and consultation with concerned authority. That is where even institute of importance like IITs, NITs and those people can help. There are lot of expertise in the country and which can help with all these waste management and other activity that is going on. It is only thing is that we need to get them involved. We need to get them involved and ask them to do the thing that they are good at.

Not, we sometimes we feel like that we get some of the request as if IIT professors are like an all-rounder, they can do everything. We cannot do everything, we can provide you a good technical input. We can make, that is our expertise where we can tell you that okay, in technically this is good, technically this is not good, this may work, this may not work and can do some techno-economic feasibility, those kind of things we can do.

But trying to get this build on the ground, that is not our, we have never done that. So we, that is not our expertise to help with that but any, again that local and it does not matter whether IIT, NIT, that any institute locally available can really help in terms of providings to the local authority. It is that we need to get the conversation going. And that is what little bit missing in our country. We do not really talk to each other which we need to start doing that.

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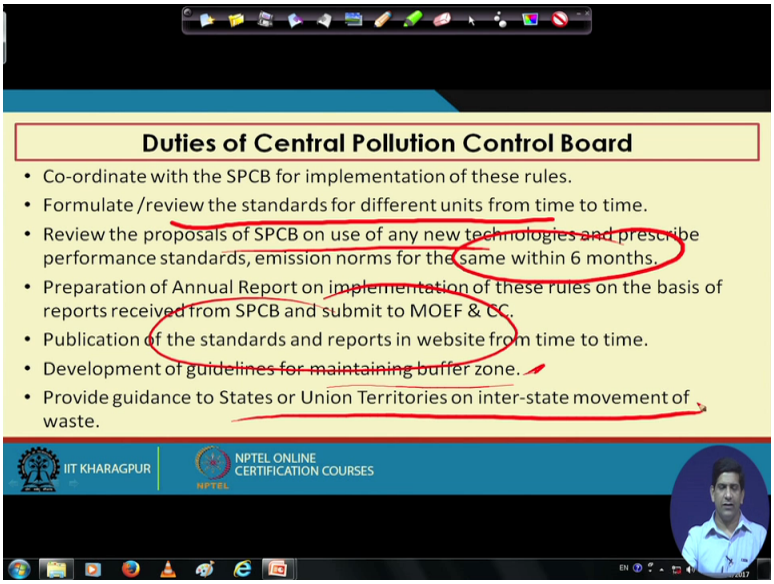

And duties of Central Pollution Control Board: Again they have to co-ordinate with the State Pollution Control Board, make sure because CPCB is at, it is kind of, Central Pollution Control Board is the arm which will do the implementation with the help of SPCB and the local authority. So SPCB is the State Pollution Control Board, so they will co-ordinate with SPCB and do the implementation of the rule, formulate review of the standards that they will do, review the proposal of SPLP for any new technologies. They try to get this within six months, try to revert back to them.

Prepare the annual reports and look at the implementation of the rules and then submit to Ministry of Environment. Publication of the standards and reports from time to time, development of guideline to maintain the buffer zone along the different like waste facilities and then provide state and union territories for inter-state movement of the waste. So those things Central Pollution Control Board has to do.

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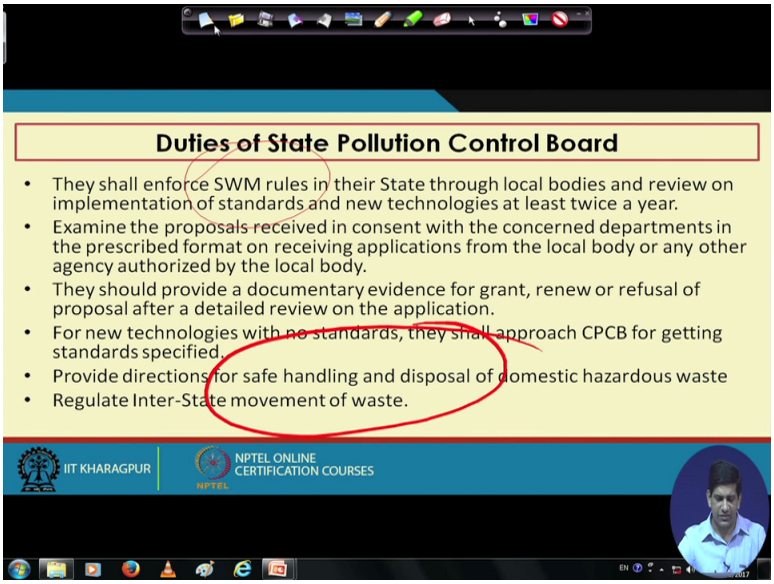

Then we have State Pollution Control Board which has certain rules and regulation as well. So they will be, kind of they do the same thing at the state level where they enforce solid waste management rules at the state level because solid waste management rules is actually a state subject. Waste management comes down to the state, then to actually urban local body. So it is a local government issues.

And local, so through local bodies review the implementation, examine the proposal, do the, and similar stuff for grant, renew. For new technologies, they sell approach CPCB and those things are given. Direction for safe handling, inter-state movement, so those simple similar stuff has been listed for SPCB as well.

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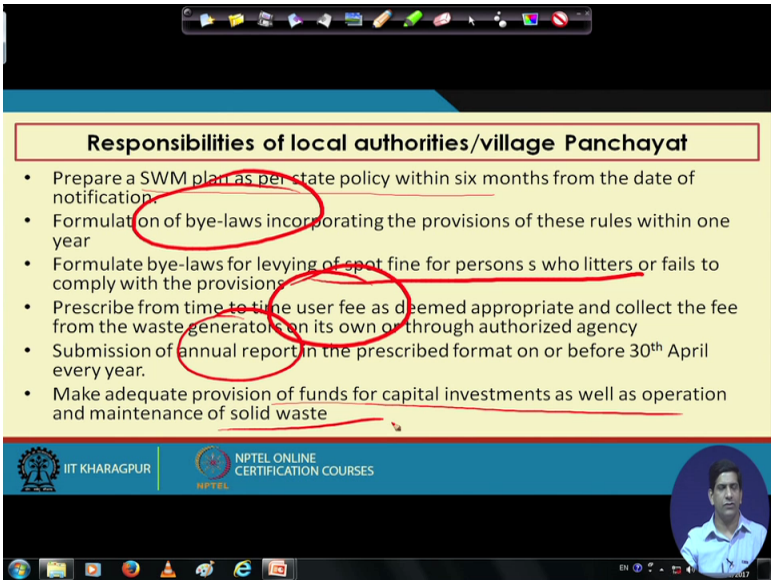

So in terms of local authorities or village panchayat, they have to come up with a solid waste management plan because they know about the solid waste management the best. And that is, it should come from the grassroots. Things should not come from the top, actually things has to come from the bottom, then only the thing, there will be ownership of the local people there. If we force things from the top, many times the ownership is missing. And when the ownership is missing, you go there, you get something done and then you leave.

The local people do not feel like that they belong to that because they were not part of the decision making. So that is where we need to get them and involve. And public participation is very, very key in making these things work because there is a public involvement in on each and every day. If they do not give you good quality waste, if they do not do the source separation at home, your whole design will fail. So prepare a solid waste management plan, that is what the role of ULBs or the village panchayat, that to have the solid waste management plan.

Make the bye-laws, then formulate in terms of the, you have to do the spot fine and the user fee. Look at the user fee, submission of the annual report, make adequate like look at the funds, so the capital investment and operation and maintenance of solid waste. So those things these local urban bodies as well as the village panchayat has to do.

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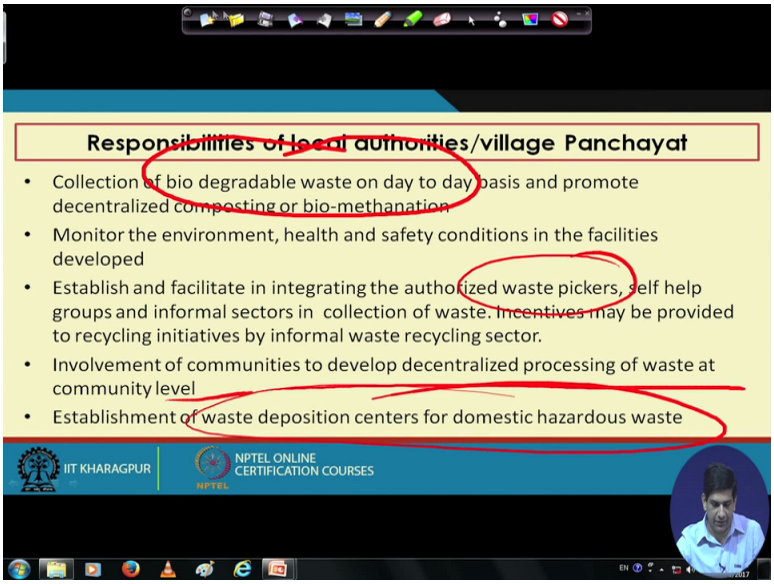

So like look at biodegradable waste on day-to-day basis. So that is again another thing, it is where they have tried to talk about is that let us this biodegradable waste at least do that on a day-to-day basis, so that because that start smelling. And if non-biodegradable probably can be collected once in a week if we have. That collection can be done too.

But biodegradable every day and promote decentralized composting or biomethanation. Monitor the environment, establish integrate the authority. Try to authorize, have authorized waste pickers, self help group, get the NGOs involved, get the informal sectors involved. So all these things have been left, has been asked by ULBs to do it. And ULBs has to try to get these things going. Some ULBs are already working in this area. And then involvement of communities to develop decentralized processing of waste at the community level. Then, waste deposition sector for domestic hazardous waste. Rather than having collection, you can do waste deposition center as well. So those things have been asked for the ULBs.

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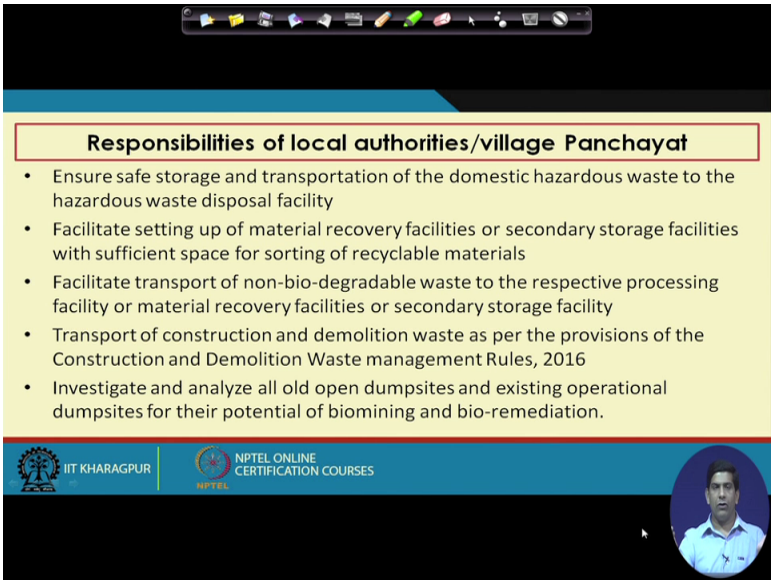

Ensure safe storage, setting up of the recovery facility, transport, construction and demolition waste as well, looking at all open dump sites now and how to do the cleanup, doing the bioremediation of the site, capping of the site, so all those things have been left for urban local bodies to do it.

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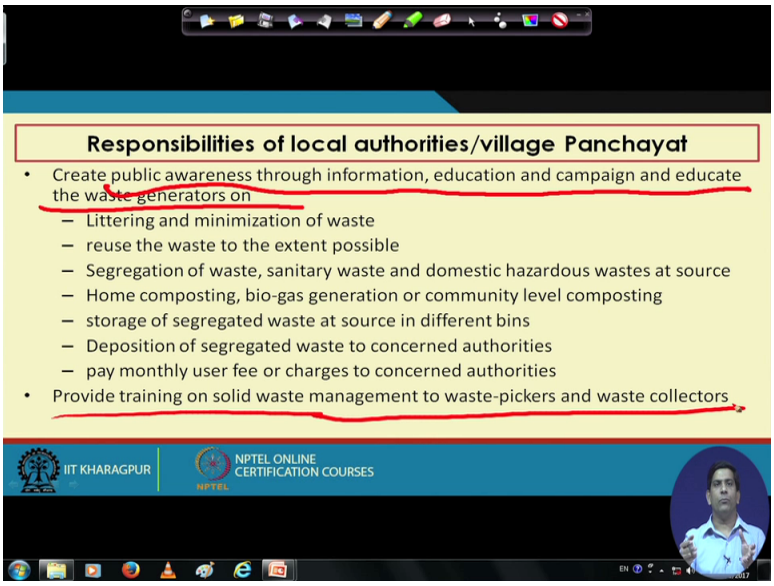

And then create public awareness, that is again very, very critical if you, this public awareness is a very, very big thing. Other than that, having education, information, campaign and educate the waste generator. Like and then look at the littering, reuse of the waste, segregation of the waste,

home composting, storage of segregated waste, deposition of segregated waste, the user fee, provide training on solid waste management to the stakeholders. So these are very, very critical in terms of what is needed to make it really successful. So as you can see in this waste management rules, it is like very has been, lot of things have been, has been spelled out and it is a very clear rule as opposed to 2000. Lot of clarity has been brought in which is going to help.

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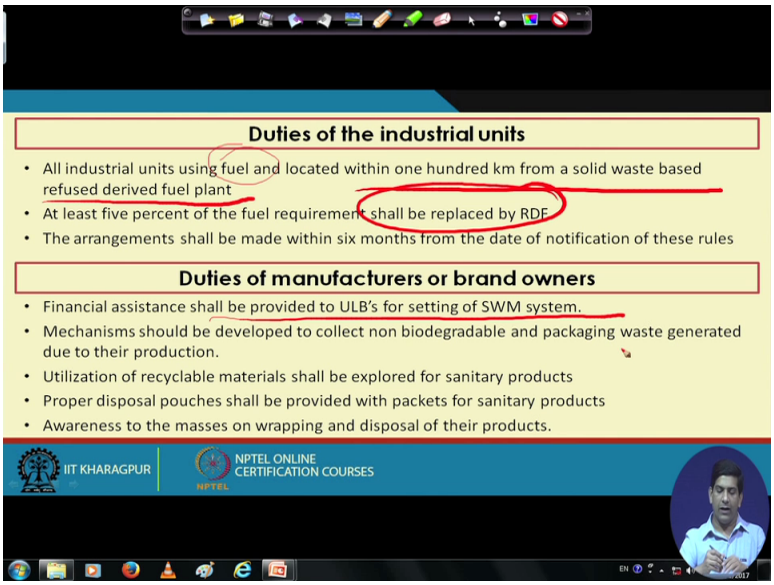

Then there are duties of industrial units. All industrial unit using fuel if they have solid waste, if they have a waste-to-energy, if they are using fuel and if they have a 100 kilometer away from a solid waste based refused derived fuel unit, they should try to use that fuel. 5 percent of the fuel should be replaced by RDF, so that is there.

And manufacturer or brand owners to provide ULBs for setting up because mechanism should be developed to collect non-degradable, packaging waste generated due to their production. So those utilization of recycled material, proper disposal of pouches or sanitary pads, awareness to the masses, so those things have been asked for the brand manufacturer or the brand owners in terms of what they can do to help in the waste management rules.

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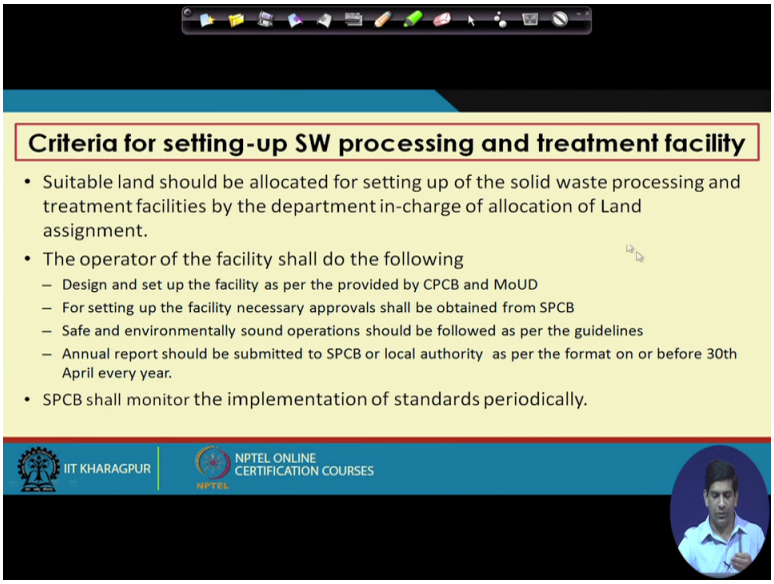

So then there are certain criteria have been set up. Criteria for setting up solid waste processing and treatment facility, so how to do the design of solid waste processing and treatment facility, rest is there.

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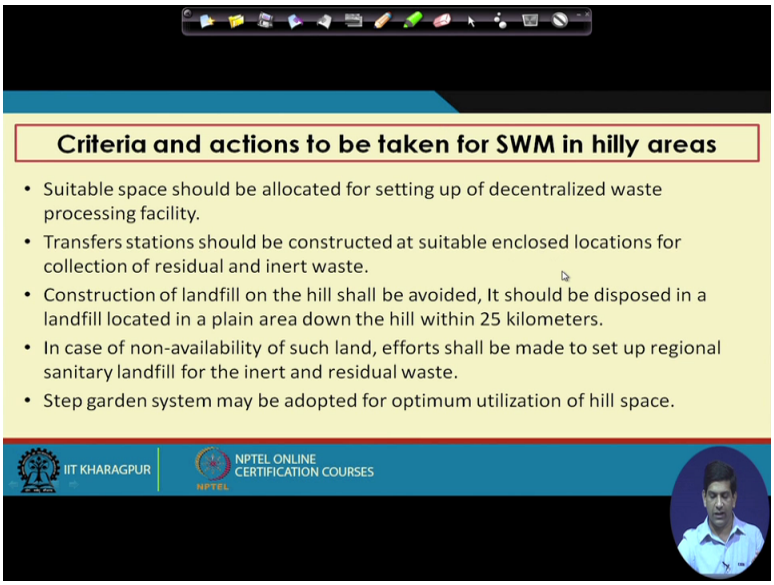

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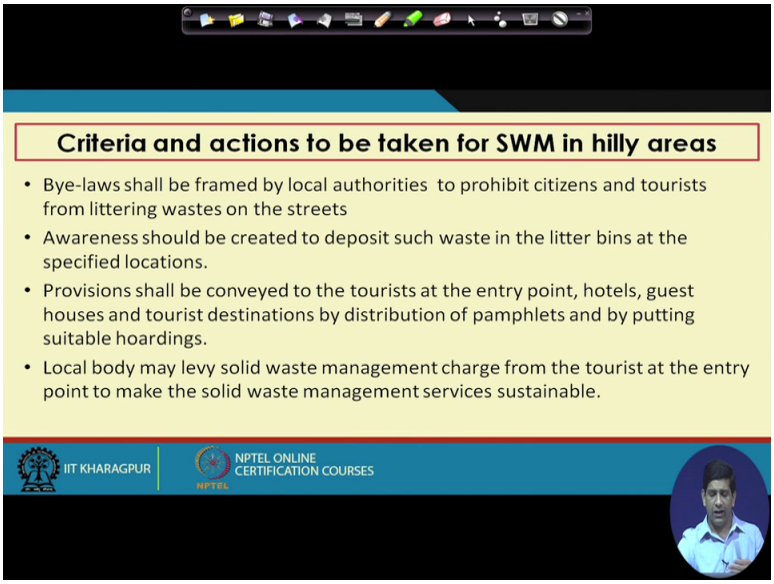

Criteria for, taken by the hilly areas, there is a special things have been given in terms of the hilly area. We do not want any landfill to be constructed in hilly area. So we have to bring it to the downhill. So if the land is not available, then maybe the sanitary landfill. Step garden system can be used for the optimum utilization of the hill space, so those things by-laws has to be framed. Awareness has to be created, so those things has been given in terms of this like a, and then the tourist coming to the hilly area, they can be charged for little bit for the maintenance of the solid waste fee, solid waste facilities.

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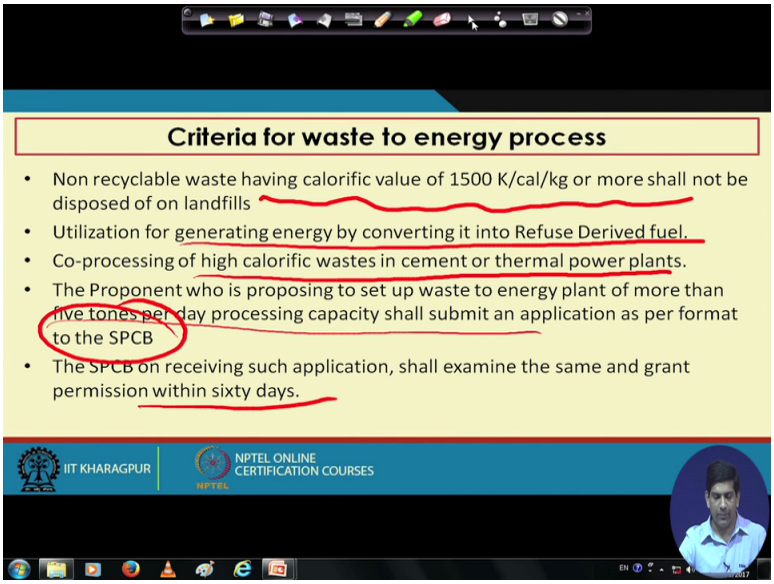

Waste-to-energy as I said earlier, the non-recyclable waste having a calorific value of more than 1,500 kilocalorie of kg shall not be disposed in a landfill and should be taken to a waste-to-energy plant. But if it is less than that, it is we, that is where the problem. And then you can generate energy by converting in RDF which is Refuse Derived Fuel. You can work high calorific, cement or thermal power plants. Proponent who is proposing to set up waste-to-energy plant more than 5 tons per day processing capacity, submit an application to SPCB. SPCB will examine and remove within, reply within 60 days. So some, again lot of timelines have been given which is really good. Try to have some deadlines so that things move.

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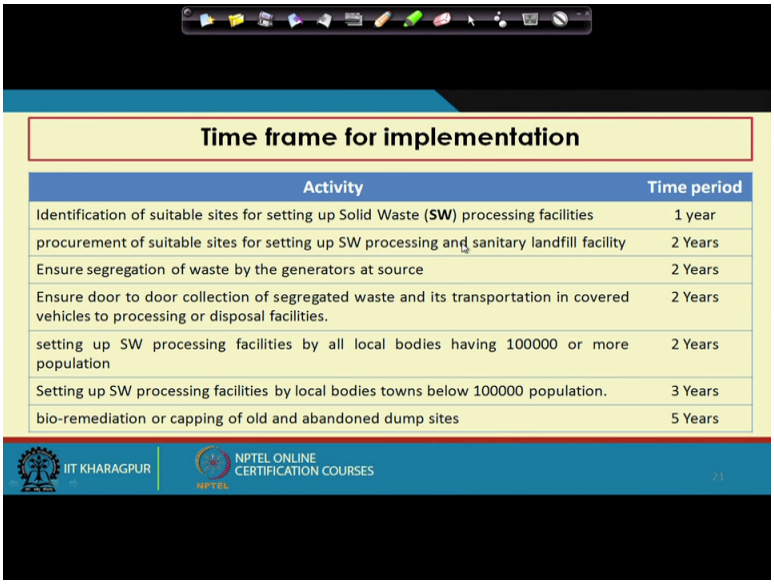

And these were the timeline, time frame for the implementation which we kind of talked about. Different timelines have been given, you can look at the time period.

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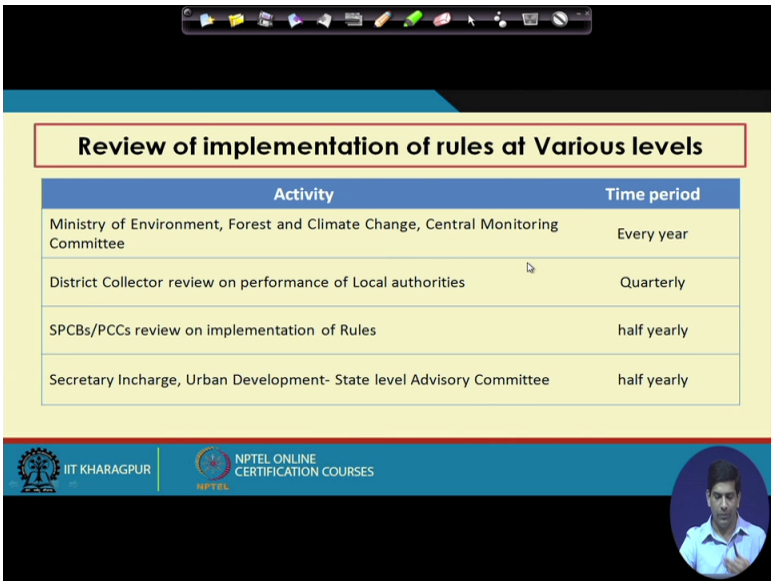

And review of implementation at various level, how will the review will be done and who will be doing the review and what time period they need to get that done?

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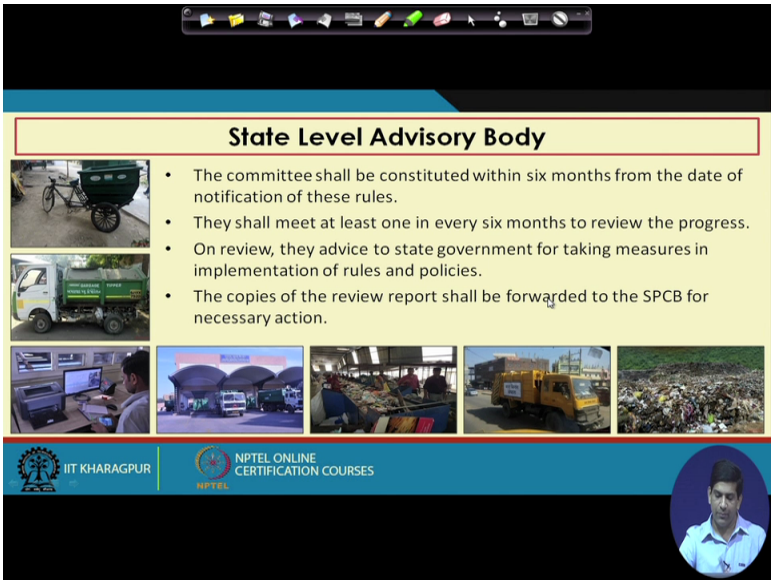

There will be a state level advisory body needs to be set up like it is many states have already done it. I do serve on the state level advisory body for the West Bengal as well as for the Bihar government. So there is a state level advisory body which is there for in terms of like having a review of solid waste management in that particular state.

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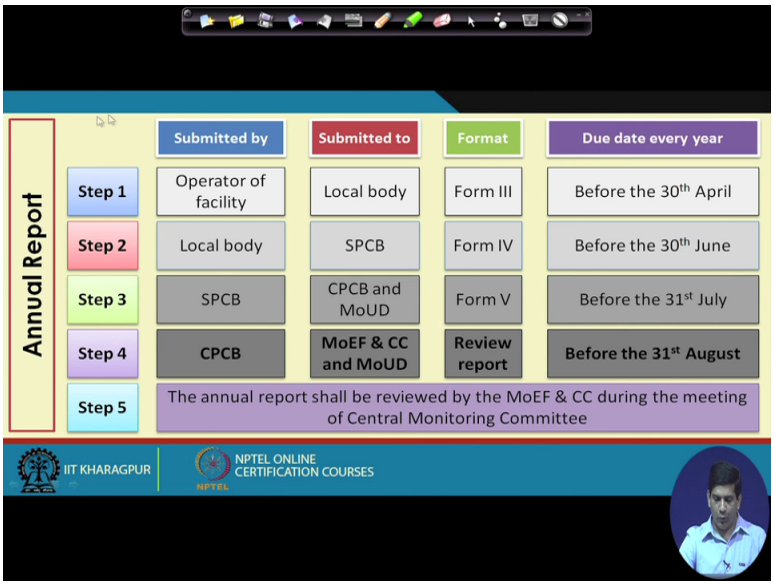

So there are, then there will be annual reporting. When it is due, the Step 1, Step 2, Step 3, Step 4, so these are the like who will be going to submit it by, submit it to what format. Different forms have been given as part of that. There is a due date for each of the report.

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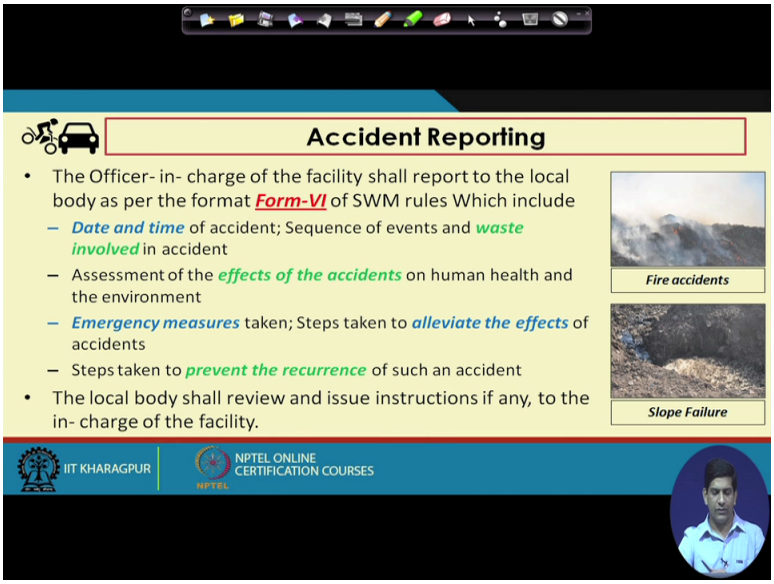

And if there is accident happens, there is forms for reporting the accidents. If there is a fire accidents, there is a slope failure, those accidents have to be reported.

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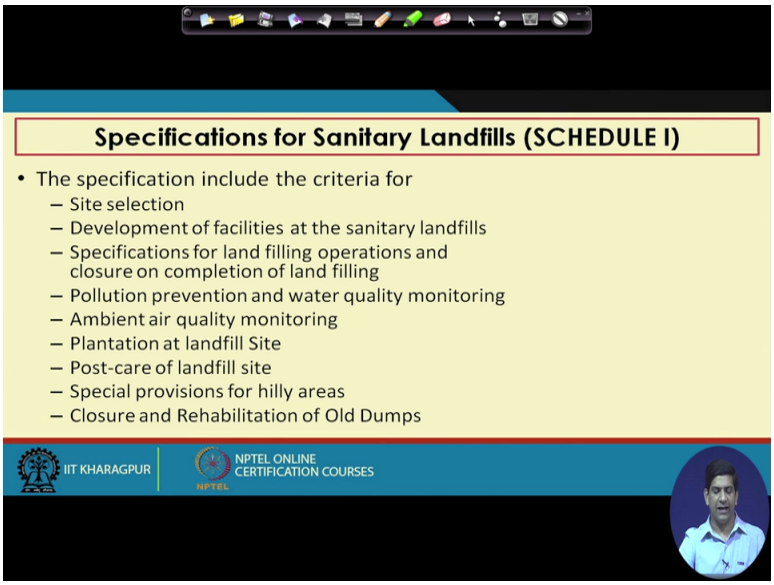

There are rules for sanitary landfills have been given as well. We will come back and look at some of these rules when we go to the landfill chapter where how to, how the site will be selected, development of facilities, those things are provided.

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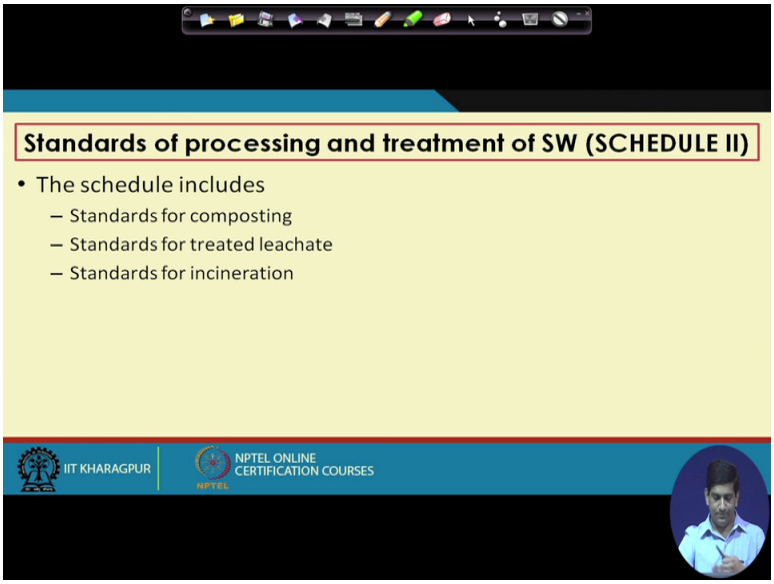

And standards of processing and treatment of solid waste facility. What is the standard for compost, for the leachate, for incineration?

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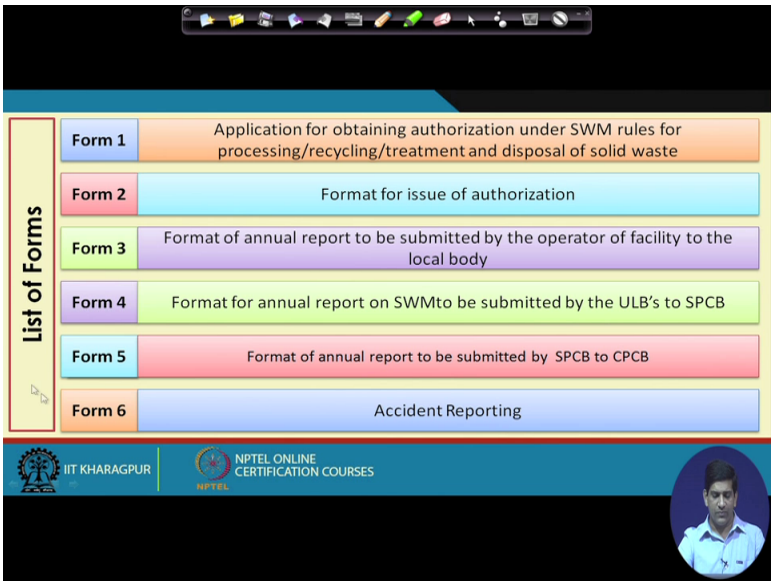

And there are lots of forms. As you can see here lots of forms which is provided where you how to obtain authorization, format for issue, format for annual report and format for like say annual report from SPCB to CPCB, accident reporting form and all those things are available.

So this in very nutshell, again I have tried to give you a quick overview on that, this module and the last module on the Solid Waste Management Rules 2016. It was a bit quicker review but I think I have covered the most important aspects of the rule. Again I would encourage you to look at the rule as well. And there has been some small documents prepared, kind of a review of the rule as well. You should try to read that which is available in the public domain. And at the same time, these two videos will be helpful to try to understand the rule. And also I tried to put these rules a bit in context with the international practice and some of the challenges in implementation of these rules.

So with that, we will conclude this particular module. And then we will look at other programs which is the Swachh Bharat Mission, sorry the Smart City initiative and the other initiative of that government in recent past. So we will talk about that in the next module. Again, thank you and see you again.