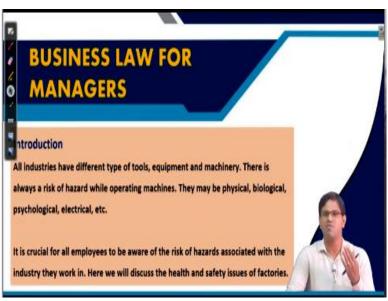
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Module-5: Factories Act

Lecture – 22 Health and Safety

Welcome to lecture 22 of module 5. And last week, the last lecture, we discussed about the background factories act and we have given you know, objectives of the act and we discussed about the various definitions. And today's lecture, we are going to discuss about health and safety provision, which are enshrined as per this factory act legislations.

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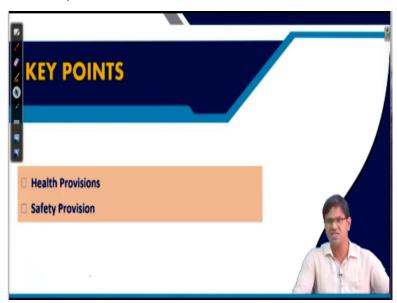


So, let us look at why this health and safety is an important. If look at in any industry and these industries using various machineries, tools and equipment, when we use various machines or tools and it is always there is a risk associated with operation of the particular machines. So, these risks can be with respect to a physical or psychological or electrical can be various risks associated with it.

And it is very crucial for employees to be aware of those risk of hazards associated with the particular factory or industry they work in. So, in this particular lecture, we are going to discuss about the health and safety aspects which are listed down by the factories act. So, let us look at what are the aspects of health and safeties are required by the factory management to ensure that yes, when they employ the workers in the particular factory.

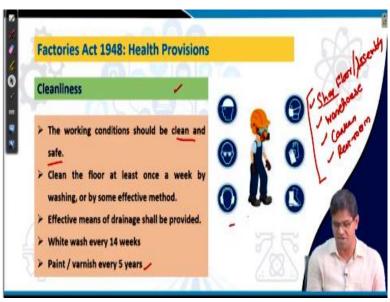
So, what are the health and safety provisions this factory has to provide to its workers or its employees.

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So, we are going to largely discuss on 2 provisions, which are: one is on health provisions and another one is safety provisions.

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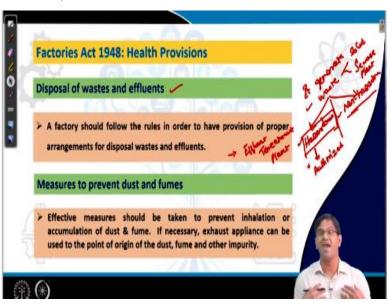


Now, starting with the first one cleanliness, so, this act also says yes with respect to cleanliness, you as a factory, you have to ensure that yes, working conditions should be clean and safe. When you say talk about a clean and safe, there are various you know processes, which is happening in a factory maybe a shop floor, we talk about shop floor or an assembly line, we call it assembly line.

Then we talk about warehouses where material being stored and we are talking about canteen facilities, restroom, the various buildings or various things which are available in the factory. So, the factory has to ensure that yes, all these plays are kept clean and safe. And the factory has to clean these places at least once a week with effective method. And there should be effective means of drainage shall be provided.

And at least know, factory has to go for a painting every 5 years. This is with respect to cleanliness. This, we are starting with a basic aspect of you know health and safety provisions. Then we will see in detail about other aspects of a thing.

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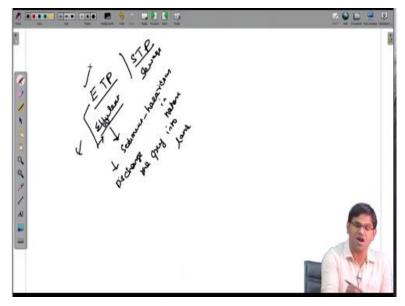
Next is about disposal of waste and effluents. When an any factory engages in an activity, there is always likely that yes it will generate waste. So, when they say waste, how this act actually says, you classify the waste into hazardous and non-hazardous and also, we say solid waste and look at where, when there is a drainage water, there should be no sewage treatment plant or otherwise you send it to the government provided treatment plant.

When you talk about the solid waste; we know it is very important. The factory buys a lot of raw materials, there can be, they use chemicals or related certain pains or some of these wastes or can be hazardous in nature and it is very important that yes, you cannot store all the waste in a same place. So, the factory has to have a dedicated place for waste management and when they have a dedicated place for a waste storage, they have to you know segregate the waste into hazardous or non-hazardous waste.

With respect to a hazardous waste, so, factory cannot directly dispose the hazardous waste. So, the factory has to dispose this through an authorized vendor. So, the authorized vendor is who have been provided certificate by the environment, Ministry of Environment or by the respective state government that yes, this particular companies are authorized vendor, who can handle this hazardous well.

So, factory has to ensure that the wastes are segregated into hazardous and non-hazardous. And hazardous waste to has to be actually disposed through an authorized vendor. And non-hazardous waste can be again, can be within our contract or agreement with another waste disposal mechanism. So, this is very important and also some places factory might have effluent treatment plant ETP, when they discharge a lot of water and it is very important that know they have this you know ETP.

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Wherein, why this ETP effluent treatment plant or STP, which is sewage treatment plant? So, the larger factories used to have effluent treatment plant. Why this effluent treatment plant? Because through this process what do they do you know, they actually have the sediments which are maybe sometimes hazardous in nature. So, this is very important.

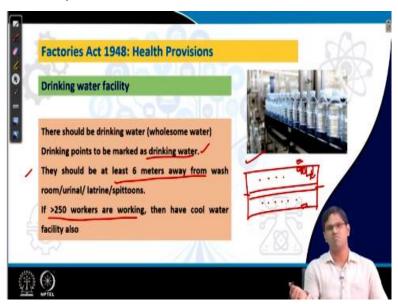
And larger factories used to have the sewage treatment plant and for an ETP yes, through this effluent treatment plant, you will only discharge the grey water. Discharge the grey water into the land, you cannot just discharge the contaminated water on the land. So, because it is as per the regulations and the environmental policies, yes, it is a pollution.

So, factory should have these if the larger factories which are generating large amount of these waters, they should have an effluent treatment plant and some factories might also have a sewage treatment plant. So, these are the with respect to the disposal of waste and effluence. And the next comes with the measures to prevent dust and fumes.

If you look at the large some of the activities in a particular factory or maybe some major factories might have this engage in an activity that will create dust and fumes. So, the factory should ensure yes, they have given effective measures to prevent the worker being inhaling those dust and fumes. So, you see someone certain activities, they would have provided specially made masks that yes, do not the workers do not inhale those dust or fumes when they are actually working on the particular activity.

And the factory also should set up an exhaust provision. So, that the dust or fumes being taken away that does not create a lot of health risk for the workers who are working in those processes.

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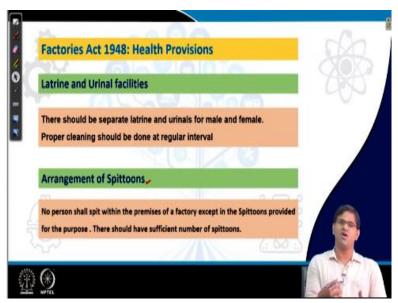
Then, comes drinking water facility. So, the factory has to provide a drinking water to all its workers and these drinking water points has to be clearly marked as drinking water. Because the factory cannot use the same water which been used for washrooms and in other place. So, that is why, it is required that yes, you have to indicate drinking water points separately. Maybe some of you who have visited to the factories could have seen that yes, this is a drinking water facility.

So, when they have a drinking water points, why we are talking about drinking water point? And for example, this is a factory; there is a no assembly line and you see workers have been working here this decide, this decide and you always see these are all passages and doors and all that you will see some drinking water points here. And it has to be marked as a drinking water and you ensure that drinking water point is not next to the toilet or a restroom that is very important.

You say, it is also saying, it is at least 6 meters away from the washroom or a urine or a latrine place, because we have seen some of the factories where you see that yes, just get into the washroom and then you just beside that they will keep the drinking water points. This is a noncompliance. So, why there is a possibility of contamination? It is also some health risk for the workers. That is why there is a requirement yes, you should keep the drinking water points 6 meters away from this washroom or urinal places in the factory.

And in case of the factory has more than 250 workers which are working, there should also provide provisions with a cool water facility also. So, there should be you know, both the waters the normal as well as the cold-water provision should be provided if we are engaging more than 250 workers in a particular factory.

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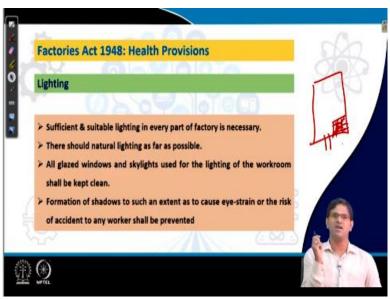


Then we are talking about a washroom facility yes, factory asked to provide adequate number of washroom facilities for both male and female workers. There should be a separate place to be provided for both male and female workers. Because, it also talks about you know, privacy

for women workers and safety concerns also is there. So, the factory is required the factory management to provide 2 independent washroom facilities for both male and female workers.

And it has to be the regularly cleaned and it has to be regularly seen whether it is clean and all the maintenance been done. And also, arrangement of spittoons, there should be provisions to the workers to spit, but most of the factors does have, but now, we will look at now with the larger and more advanced factories where the workers do not engage in this sort of activity. So, this is also but also a requirement in the smaller factories and it with respect to lighting.

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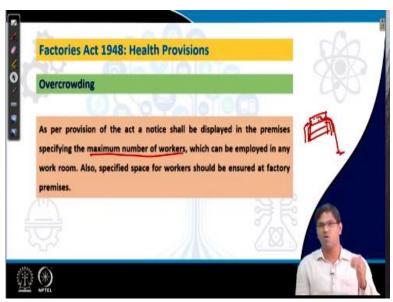


So, these are also talk about whatever lighting facility the factory has to provide. The factory management has to ensure that yes, there is sufficient and suitable lighting in every part of the factory. Why the lighting is concerned? See maybe you know, you might have a larger factory, some sections maybe dark imagine in case of any incidents or untoward accidents, any fire breakout.

If there is no adequate facility, there can be a possibility of you know workers know having some difficulty in going, reaching the exits, emergency exits. And also, when they work not with an adequate lighting, there can be possibility of risking themselves in some of the accidents, workplace accidents that is why there is a requirement yes, factory management has to provide sufficient and suitable lighting facilities.

And you know, all the formation of shadows as an extent to which cause the eyestrain because know when without a proper lighting, workers might have the eye strained and are the risk of accident as I was explaining that is why this provision of lighting is important, the adequate lighting should be provided for the workers working in the factory.

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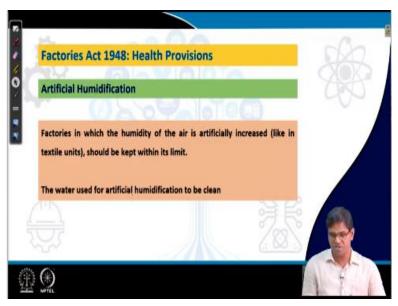
And overcrowding: as this all also says that yes, there should be notice displayed in premises specifying the maximum number of workers which are employed in the particular work room. For example, factory might have multiple floors, maybe sometime you see the mezzanine floor, the floor in between the first floor and the ground level we have a mezzanine floor, sometimes you know, there is a possibility of overcrowding.

Why a factory is talking about avoiding the overcrowding or restricting the number of workers to be working on a particular worksite? The reason is seen, there should be adequate exits or there is a provision that yes, these many workers in terms of any accidents or a fire, they are able to exit. If there is an overcrowding, you know, what is happened? What will happen?

Well actually, you know, in terms of any fire, in terms of any risk, any untoward incident happens, there is potential chances of you know stampede kind of situations likely to happen in those risks situation that is why factory also regulates, what is the maximum number of workers work in these particular square feet of rooms. So that is being specified. So that you know adequate space, working space also to be provided.

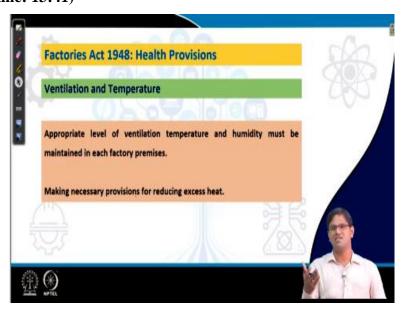
It is not only about these overcrowding, talks about does the worker have a working space to work because they should be not be constrained of you know, too much people working on a same table or a worksite which is a tough. That is why the overcrowding is to be avoided.

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Then factory act is also speaking about artificial humidification you know, where that humidity which artificially increased should be, so that it kept to the maximum limit, you know, sometimes you see, water being used in for the artificial humidification to be clean. I have been to many factories where the water being artificially good, so, that the humidification is maintained at a maximum limit.

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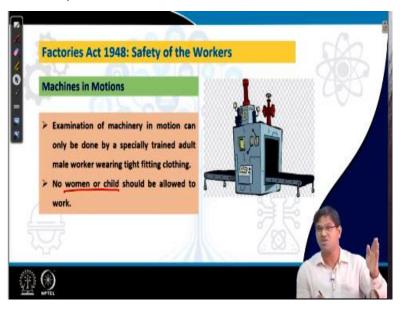


Then ventilation and temperature: yes, appropriate level of adequate level of ventilation is provided to the workers and also ensure that the temperature is also maintained, wherein, you see some of the activities where we say moulding or plastic moulding factories or where some iron industries, where workers work in a very heavy high temperatures, there is also the continuous exposure to that kind of a high temperature has a larger, long term health implication to the workers.

So, the factory management should also ensure that yes, the temperature is not so, high is that it is going to have a health impact on the workers. So, there should be in case yes, there are some processes, which will generate a lot of heat. So, factory management has to ensure that yes, there are the ways in which you have to reduce the heat, may be, you have to have an additional ventilation or a fan.

They used to have than many manufacturing plants now, it see that the large manufacturing has become an air-condition to ensure that yes, the heat has been reduced by way of providing additional provisions. So, that the workers are not exposing to have a health risk.

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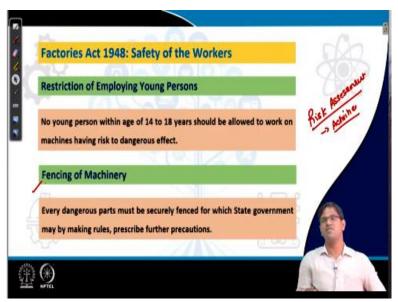


Then talking about a machine in motions. So, the factory management has to identify okay, what are the machines which are emotions and those machines should be operated by the trained worker. And that worker has to always work with a tight-fitting clothing because there is a possibility that there are the cloth, the uniform they wear may get into the moving machines, there is always a risk.

And it is also said that there were places where the machines are, the moving machines are having a fence. The fence being created, so that workers do not have the risk of having any

accidents or workplace accidents when they work near the moving machines. And if you look at the woman or a child is not allowed to work in machines in motion that is where we said, this factory act has provisions with respect to protecting women and children if they are employed.

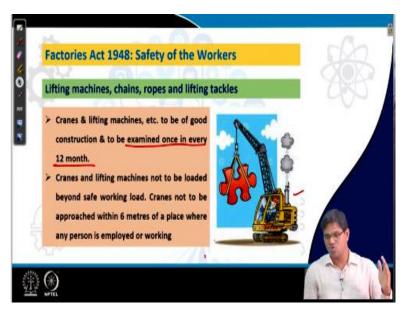
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Then restricting employing young persons. So, knowing persons is allowed to work on a machine which are dangerous in natures. So, the machines or the activities are generally classified as you know, non-noticed because every regularly factory has to do the risk assessment. The risk assessment will classify. What are the risks associated with each of the activities? Yes, let us say some machines in this particular machine, what is the risk associated with it?

What is the regular review to be done? So, that the risk have been contained so, in those dangerous activities or operations, the young children or adolescent or the young workers, women are not allowed to engage on those particular work. As I was already saying that referencing of machineries, yes, dangerous machines or motion machines in motions are apt to be fenced properly so, that know, there is no risk involved when the workers work on the particular machines and only trained persons are allowed to work in those machines.

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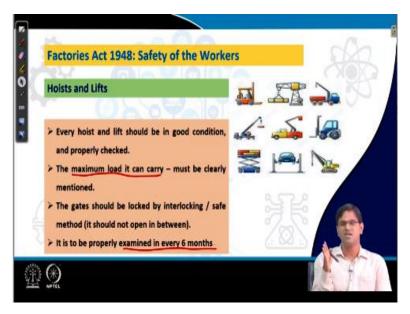


Then, if we look at the cranes and lifting machines, what are the provisions with related to that machine to be used. See, when they use cranes or lifting machines, it should be of a good construction and it should be examined and certified once in every 12 months. So, there should be an assessment on the particular cranes or machines been used that yes, this deems fit; it is all been regularly examined and it is fit to be used in the particular factory.

And in case if the cranes are lifting machines not to be loaded, the same conditions safe working load beyond safe working load and when the cranes are moving and it should not approach 6 meters of the place where the anyone has been employed. For example, if somebody is working, it should not operate within the 6 meters of the distance.

So, it is to ensure that yes, safety of the worker being worked in any of the activities because if the cranes lift and there is some mishap can happen. So, that is why this factory act specifies that yes, the worker has to be ensured of the safety and those places the cranes are to not be allowed.

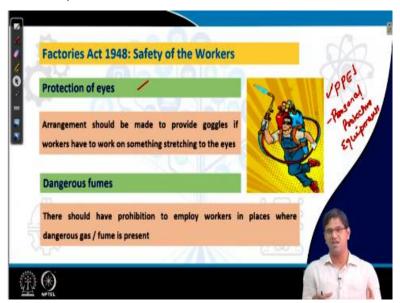
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With respect to hoists and lifts, yes, every hoist and lift should be in good conditions and it should be properly checked and it should be clearly display what is the maximum load it can carry and you should ensure that yes, gates should be locked by interlocking system or should always be an interlocking system and it should be properly examined in every 6 months.

So, it has to be regularly examined and it should be certified as yes, it is in a proper working condition. So, it can be used.

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Then talking about the protection of eyes. There are factory, when we talk about the protection of eyes, is it relevant for every factory in case, some factoring may have certain activities. For example, you know welding or maybe grinding activity. So, all those activities

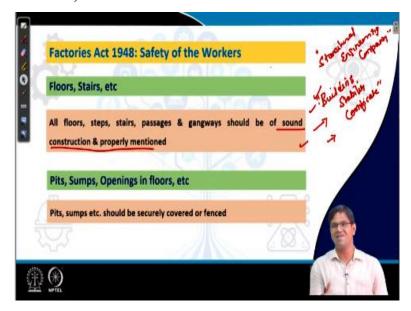
where there is a potential risk of having any risk for your eyes. So, workers has to be provided goggle.

In some places, some factories where they engage in a chemical room or a chemical mixing, yes, they have to be provided with the proper PPEs which is personal protective equipment. So, adequate PPE is to be provided and the eye goggle should be provided and any chemical rooms or chemical mixing rooms, the factory act clearly lays down yes, there should be eyewash station near this chemical rooms or chemical mixing rooms.

Why? In case any spills, any accidents on your eyes, there should be an eyewash stations where the worker can go and wash their eyes. The eyewash station (()) (20:03), there will be 2 water provisions where it will actually know when the water will be flushed turn on your eyes. So, that should be eyewash stations to be placed and also there should be wash station as well, you know sometimes any chemical rooms and chemical mixing, there can be a risk of having any risk health risk to happen.

So, there should be wash station as well to the nearby chemical room. So, these are the minimum requirement if the factory has certain activities which are likely to have any risk associated to the workers. Then any dangerous fumes. Yes, there should be a prohibition to employ workers in place where there is dangerous gas or fumes is likely to be presented. So, their workers have to be prohibited to go or work on those particular places.

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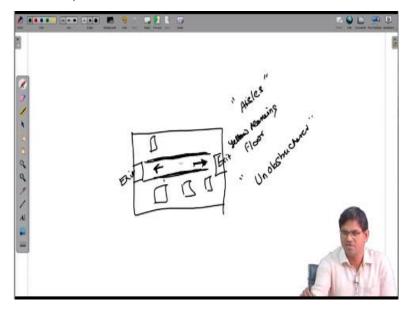


Then comes to no floor stairs and etcetera: so, all floors' steps and stairs and passages should be of sound constructions where and properly mentioned. When you talk about sound constructions, there is also a requirement of building, stability certificate, okay every factory has to be assessed by the authorized structural engineering company okay.

So, the authorized or certified structural engineering company should assess the buildings and floors and the constructions of the factory and should provide a building stability certificate that yes, this factory or the buildings are in a fit condition that it can be used for the set or defined activities. For example, sometimes the factory might say, we are going to run these, these activities, but eventually they might be doing a different activity.

So, that construction may not be sufficient to conduct the, maybe a certain set of activities. So, that is the responsibility yes, the authorized structural engineering company has to assess the stability of the building and provide building stability certificate.

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Now, this is about a stability of the certificate. Now, we also if you look at in the factories, what will happen? So, you will have a way if you some of you have visited the factories, you will be observing yes, this is the shop floor okay. I am just putting these are the machines, these machines somewhere okay these are the machines and machines and you have the exit here and you have an exit here.

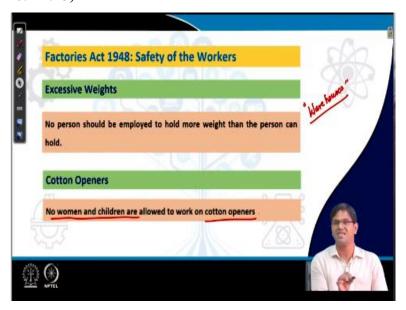
See, now you should be within the machines, there should be a hele marking Okay, so this hele should be marked in a yellow colour. Yellow colour marking has to be there on the floor.

I am talking about yellow colour marking on the floor and that should be a red colour arrow mark which indicating the exit routes. It has to be on the floor and this hele marking we are talking about a heles, this heles should not be obstructed. It should be unobstructed.

There should be any time of the operations of the factory, you should not keep any materials on these heels because it will obstruct the workers to access the exit because why we are talking about this? Why this has been very mandated? It is one of the requirements of the safety conditions because in case of a fire, in case of any emergency, workers will use this passage on this route and nothing should be stored on this passage.

No machines, nothing should encroach this clearly marked heels which should be marked in yellow in colour and the arrow marks should always show towards the exit. this is an exit, yeah. Now, let us talk about that and next of all about the big sumps and opening the floor, big sumps should be secured, Coverley and fully fenced. It is to reduce the risk of the workers.

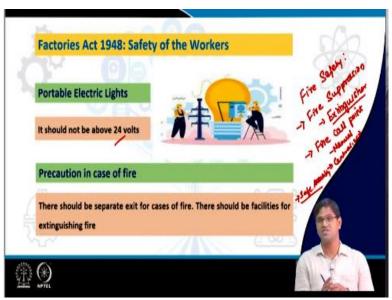
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And there is also provision with respect to excessive weights, no person should be allowed to carry anything weight, more weights than the person can hold and especially on the warehouses where we see that yes, workers are not allowed to carry very heavy weight or maybe you know, asking him to load in a height which is more about those 6 feet height, so it is very important.

Yes, these workers are not asked to carry weight which is more than what they can hold and no women or children are allowed to work near any cotton openers. So, there are a lot of cotton industries where these in the cotton openers, children and women are prohibited as like you know working on a dangerous machine or near the machine in motions.

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And many portable lights been used in the factories. It should not be above the 24 volts and we are talking about precautions in case of a fire. See, this is very important aspect in any factory. This factory legislation factories act legislations emphasis on the fire safety system. What does it talk about a fire safety system? It says yes, there should be a proper fire suppression system.

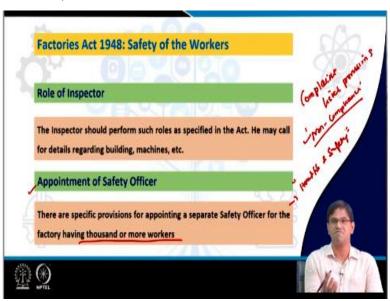
When we talk about a fire suppression system, it can be either a fire extinguisher, most of us would have seen, the fire extinguishers are being kept in every shop floor, every part of the building. So, that now in case of a fire, the fire extinguisher can be used and there should be a fire call point either it can be manual fire called point or centralised fire panels which are so that the security can actually see okay, which locations has fire when they alarm the siren goes off.

So, the workers asked to rush to the safe assembly point. Let me go back and explain here. So, in every factory, there should be safe assembly point. When case of a fire anytime and there is an alarm being called, worker has to rush to the safe assembly point and they will be there. So, the factories act will clearly lay down yes, there should be fire suppression system and there should be fire called point and also, safe assembly point.

And you see, there are some places wherein maybe a warehouses or materials been stored or maybe finished goods are stored. Some places where there will be no worker working. So, there should be an automatic deduction system and there should be water sprinkler being used. So, maybe some of the factors use water sprinklers because when they identify any smoke detectors are there, it will automatically give you an alarm.

It is an automatic alarm system and also any smoke, then there is a water sprinkler which will suppress any fire breakout in the factory. So, these are the important requirements in any factories. So, that does not risk any of the workers in case of a fire in any emergency.

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And comes the role of an inspector with respect to health and safety provisions. What does the inspector play a role in ensuring that yes fire health and safety provisions are existing in the factory? So, the inspector of factories will visit the factory and he or she will investigate inspect the factory and see that okay, do they have all these requirements being met? Are they being compliant with the listed provisions?

So, any non-compliance resulting the stricter legal actions on the factory because if they fail to ensure, there is a fire safety provisions, the fire suppression systems are provided. So, in case if that is not there, then they are actually violating the legislations and they will be marked as non-compliant and they have to go through the process of re-correcting and factories inspector can sue them as per these legislations.

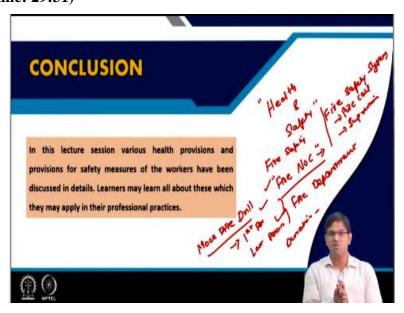
And also, it also talks about the appointment of the safety officer. There are specific provisions for appointing a separate safety officer for factory having 1000s or more workers. When a factory having 1000 or more workers, a factory has to appoint a safety officer. What is the role of safety officer? Safety officer becomes the responsible person who is looking after the health and safety provisions in the factor. As we talked about no fire safety, we talked about fire safety and machine safety, electrical system safety, so, all that will be looked after by the safety officers.

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So, these are the references.

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And in today's lecture, we discussed about various aspects of health and safety provisions which are enshrined by the factory act because it is one of the fundamental aspects of the

factory act. It is asking requesting on mandating the factories to yes, you provide this health and safety provisions to the workers. So, that workers are working in a safe working condition. This is very important, especially with respect to machine safety, with respect to electrical safety, with respect to file safety, which are minimum criteria that yes, you are able to meet.

For example, with respect to fire safety, so, every factory has to have a fire NOC, no objection certificate from the fire department, local fire department. It is also a minimum requirement to run your factory. So, when we go for a fire NOC, what are they being evaluated? They are being evaluated based on; do they have adequate fire safety system?

So, where fire safety system which is respected to as I said fire called point, fire suppression system whether they have an adequate number of fire extinguisher has been regularly examined, tested and also once in every 3 months, they have to do a fire drill. Fire drill has to be done. During the fire drill so, it is like, they have to run a call the fire, fire alarm, they put the fire alarm where they should ensure that yes, all workers are coming out of the factory and reaching the same assembly point.

During the time, they have to measure how long each the last worker to reach the safe assembly point. So, it is expected that yes, within 3 minutes, all the workers in the factory has to go out from the production plant and reach the safe assembly point and when they conduct this mock fire drill, so, they have to conduct this mock fire drill. When they do these mock fire drills and they have to note down okay, who is the one first person to come out and was the last person to come out.

So, what is the duration it took for everyone to come out. So, this is what required are to know to get this fire NOC and it has to be regularly reviewed. So, in this lecture, we discussed about health and safety provisions and we will be discussing about the other aspects of the fire factory act in the subsequent lectures. Thank you.