Industrial Safety Engineering
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Lecture - 52
Occupational Health and Safety Management (OH & SMS) and OHSAS 18001 - Part 2

Hello viewers. This session we will be talking Occupational Safety, Occupational Health and Safety Management System.

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What is occupational health, safety management system means? And, also we will talk about occupational health safety assessment series 18001. How it is used to develop occupational health and safety management system. Please understand OHSA s is different to OSHA some people get confused. OSHA is occupational safety and health administration; it is OSHA is a body in United States which controls the OHS across the country it is under the Labour Ministry of US.

What we are talking OHSAS occupational, health, safety, assessment series 18001 is nothing related to OSHA, it is to the whole of the world ok.

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What you understand by safety management? It is very simple. In the previous lectures the speakers have been talking about the safety management. What is that? In any activity, any a processes, any activity which you do, there are the hazards in that. Suppose that technology yes I said technology processes they bring hazards. Example, if you want to see when we when the humanity when the electricity has been discovered, the whole of humanity was very happy is jubilant, electricity city which has come in the second industrial revolution has changed the whole world the phase, the speed, the productivity, production, everything is changed.

But, it also brought hazard with that. What is the hazard? Electricity itself is not the hazard current is not the hazard, current is flowing many times, but the voltage is the hazard. If is very low voltage hazard is very less, if it is high voltage hazard is very high. When you want technology 90 percent of the times the hazards follow.

Those hazards will get OP and out, if you do not manage it, if you do not take care it, then it will converted into injury. The hazards not to open we put risk control systems, various risk control systems. Risk control systems of very engineering nature, which will be fail safe; that means, even it fails nothing will happen like, vacuum brakes in the railways are the brakes in the heavy vehicles, fails a brakes, even if they fail nothing will happen they all the interventions.

So, the hazard not to open we put the interventions. In the last classes Professor Maiti talked about the various elements of the hazards, hazard initiate, hazard elements, hazards initiating mechanisms and target these 3 combined is called hazard.

So, hazard elements you have to understand and you have to understand what is the initiating mechanisms and you have to put risk control barrier here, or risk control barrier you can keep here itself at the hazard element level, or if you feel by any chance hazard happens incident happens to reduce the consequence you put here this control measures. So, understanding the hazard, hazard elements, initiating mechanisms, and the targets putting the risk control systems.

So, that it will be resulted into it will not be resulted into incident this whole thing is called the safety management system. How will you do it? How will you design it? How will you execute it? How will you maintain it? That is called occupational health and safety management system.

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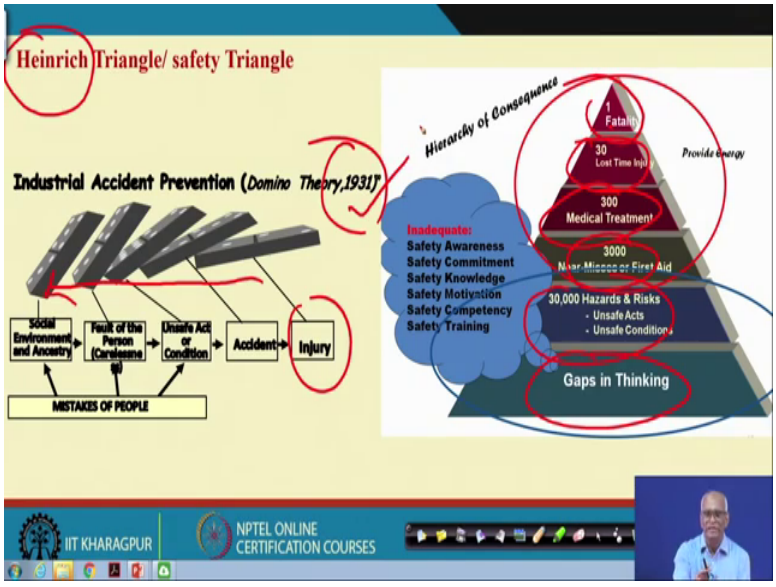

People talk differently about this things in 1930s an engineer called Heinrich, who is working in the insurance companies. He had seen all the claims how people are claiming the insurances. So, as I understood what is the injuries happen?. So, after working for some time he started analyzing the injuries. Then he has got injuries of it is own will have will not happen, it will be followed by many instance.

He called it Domino theory, Dominos you play Dominoes. So, if all these things should be present for dominos to happen. If you remove any of these things then the domino cycle will not be completed. So, he said you start removing something. What he told is for a serious incident to happen, it will not happen of it is own. Before, that there are 30 lost time injuries are 300 little severe incidents, are 3000 near miss though it has not damaged anybody in injured anybody damaged any property, but it happened, it has got potential to damage.

So, he said before this happens all these things will happen in the domino theory. Then people have improved it and they said do not know you go little step less you understand you one near miss to happened there are 30, 000 hazards, are gaps in thinking all this things are developed by people. Finally, this is people are talking about the fatality people's behaviour and all these things comes in under this.

When this happened? 1931 no hazard is processes, no hazard is operations, no hazard is machines very very lowest hardest machines, mostly people, people, people, people. So, this is at that time, but still people hang on this. People do not question the hazard triangle maybe where the people are working more and more people oriented this may be useful.

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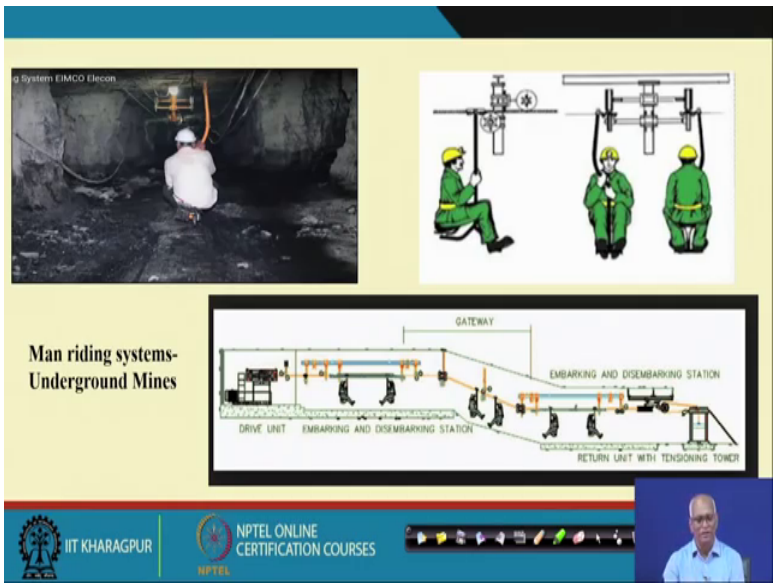

Let us talk about the other scenario, you put the machines. Even to carry the people in the underground mines you get the use the technology for everything use the technology.

So, I put more technology into that is people say that is I have put the engineering interventions everywhere, though you reduced it the technology also brought hazards. So, people who brought the technology there also incidents are happening, people who he was following the behavioural safety there also incidents where happening, the whole industries where puzzle.

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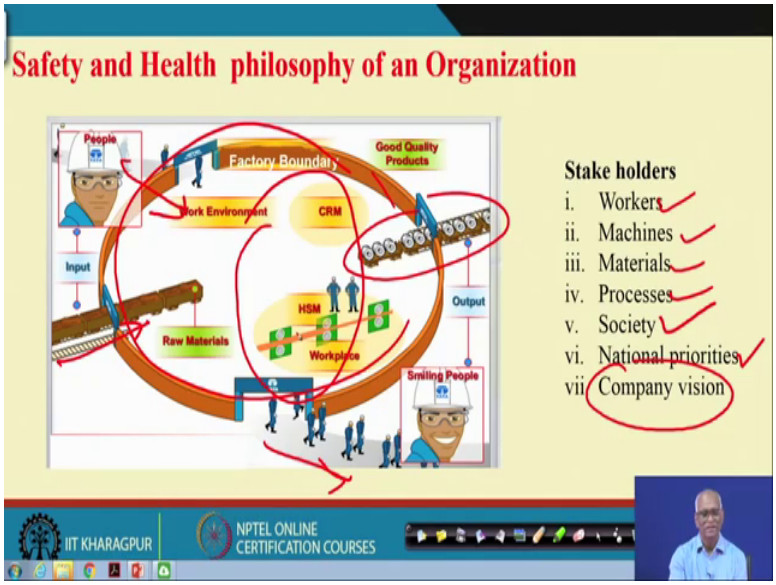

To understand this, let me tell you the safety and health philosophy in any organization. In any organization where ever people are working, how does it look you have a boundary; you have got the plant boundary.

Then you get the material, raw materials, depending upon the processes which you make output which we look suppose if it is a steel plant, where hot rolled coils are required you get the material where it will go into various things blast furnace steel melting raw finally, it is get rolled. And output coils you will get that is the processes. And other and the other side you get the people work on this, on these technologies, on these processes, and they come out.

What do you require? The people who are come they should come out happily, the processes which you make they should bring the qualitative production, quantity, quality, then it is a sustainable organization. It is very safe people are safe machines are safe not damaged production is coming out.

This is the safety and health philosophy. Health means any hazard has gases agronomics, which will damage people is also taken care should be taken care. This is called the philosophy of health and safety. This is what is to be achieved? Who are the stakeholders workers, machines, material, processes, society, national priorities, how national priorities.

Suppose we say I want to make totally automation. Probably it is not acceptable for the nation you have to create employment is the national priorities employment is also required. Companies vision companies we have different vision, along with this if you go to Tatas Tata steel this a not a blood of not a drop of blood should be seen on the shop floor, no injury is allowed, safety is my priority, welfare of the people is my priority.

We do not want anybody to get injured when people get into our plants at whatever cost, you have to see that people will come inside work and go without damaging there any parts. Same as reliance this is the priorities have been to one of the reliance projects no injury things should come in time schedule. All progressive industries, they say people should not get injured. This is the safety philosophy of any progressive industries across the world, how to achieve?

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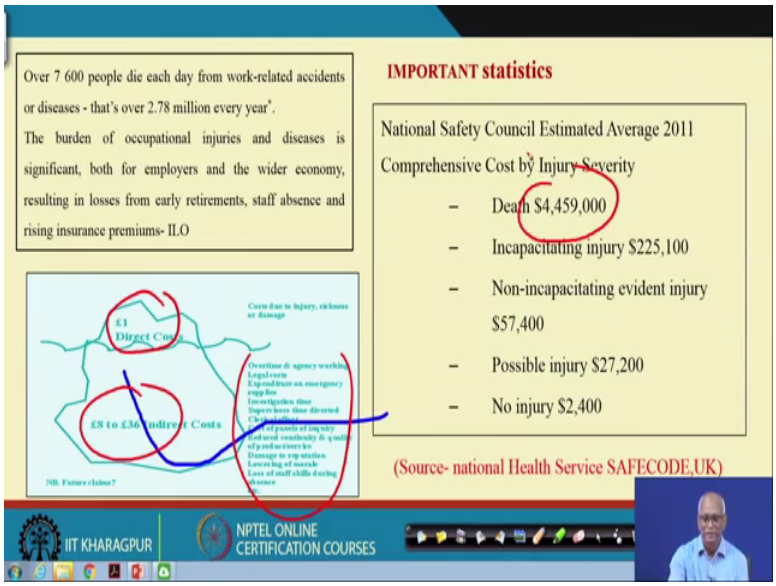

There are 7600 people are dying every day about 2.7 million people are dying, while working in the industries.

We see some we see some direct cost, direct cost if it is one pound the indirect costs are 8 to 36 times, because of the various things like legal cause investigation time reputation, reputation cause, moral lowered moral all this things you consider because of any incident that will be very very high. It is about 8 to 36 times depending upon the countries, depending upon the regulation, depending upon the priorities. National Safety Council says in 2011, this many cost of death will be this much Comprehensive Cost various figures they have to when.

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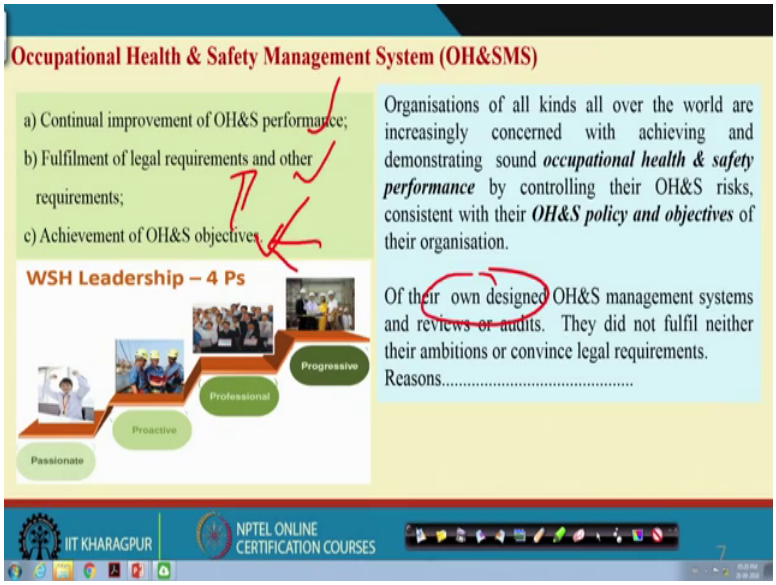

So, what are the objectives of the occupational health and safety management system? Number one they should be continuous improvement in the OHS performance. You should not be stagnant from today to tomorrow there should be continual improvement. All the legal requirements countries different countries have put different to legal requirements to protect people and properties, there they should be met and, the objectives the leadership. What is the leadership looking for no injuries, no hazards, what are the objectives you have put those objective should be achieved.

Everybody wants to do it; they design their own OHS management system. They feel they have designed very well, but when they come some legal requirements they miss, but some incidents keep happening very very serious incidents happened. They feel then they feel oh I am missed it. So, people Adhocly with their own knowledge people are developing occupational health safety management systems. They are passionate,

proactive, professional, progressive leaders are there still, because of the lack of understanding.

Because of the lack of clarity people are designing a OHS management system, which is not able to address objectives, address legal requirements, that is a big issue.

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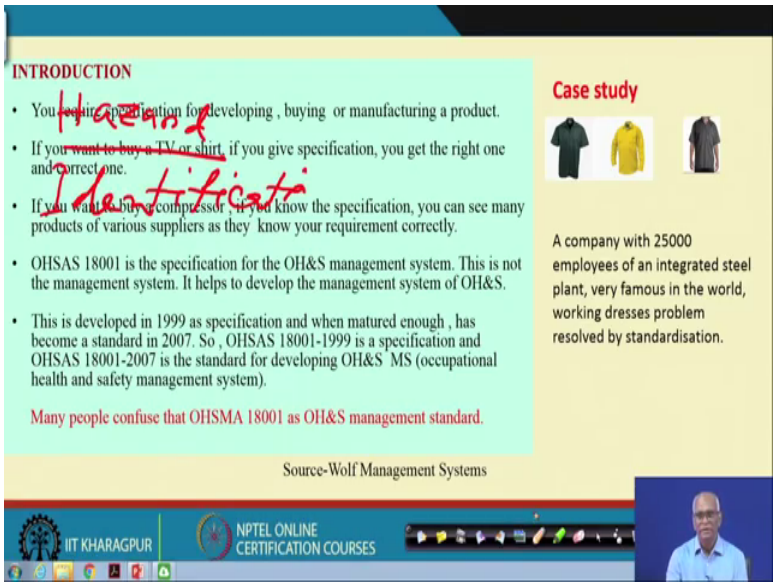

How is it to be sorted out? People feel what is the type to write in the, what is that we have to address in the OHS management system? If, you want to buy a motor you have a specification, then you will get as per your specification.

If you want to buy a TV, you have a specification, if you want to buy a shirt, let me tell you in one of the industries where you have 25000 people this is a case of 2000 year.

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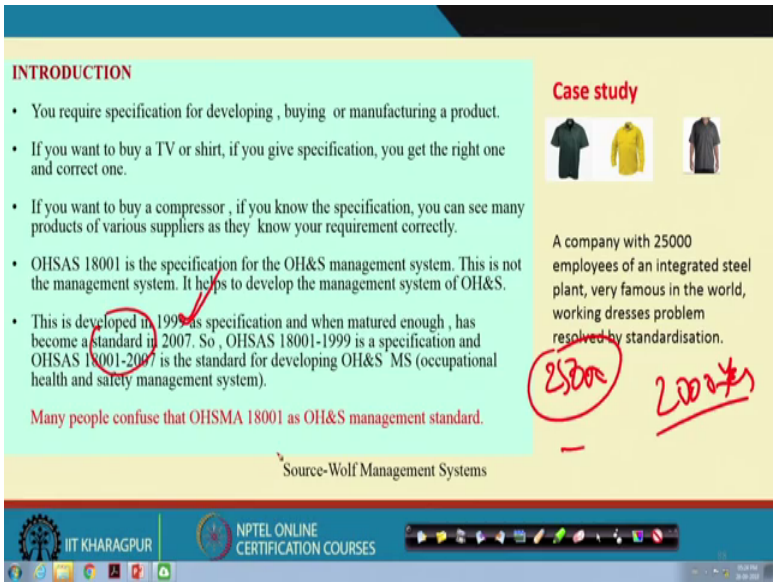

They all should be provided with a dresses, to take care of the environmental requirements, the tailors used to come take the dimensions, stitch the clothes due to the people. And people use to say it has become tight it has become loose, it is a huge problem is a whole the correcting for correcting the things tailor use to sit in the organization in the year 2000. When somebody said let us have brainstorming you call someone hundred people. We have ask how many of you buy direct stitched clothes and wear about 95 percent of 95 people are tell yes we are buying and using.

So, 95 percentile people are buying how do you buy people say I my size is 42, my size is 44, my size is 40, when the dresses which we use for all purposes we are buying, we have be stitching here. Then, we have then the organization has put different sizes 38 40 42 44 sizes of the shirts, similarly pants and they will ask people to select, your selected and accordingly the orders used to be made and the problem is solved specification. Specification will take out many problems. So, OHSAS 18001 is the specification for OHS. It tells how OHS management system should be, it is the specification, please understand it is not the management, it is developed in 1999 as a specification.

If, you are involved in specification and standards, first people make the specification they do lot of trials, they run it and they see if everything is ok, then they will convert into convert into standard. So, OHSAS 18001 1999 with a specification and it is

converted into standard. Standard is also specification, but standard specification like huge maturity has achieved you can keep following up.

So, OHSAS 2000 18001 2007 is a standard. Many people confuse the OHSAS 18001 as OHS management to standard. Occupational health and safety management standard is different. This is specification for developing the occupational health and safety management.

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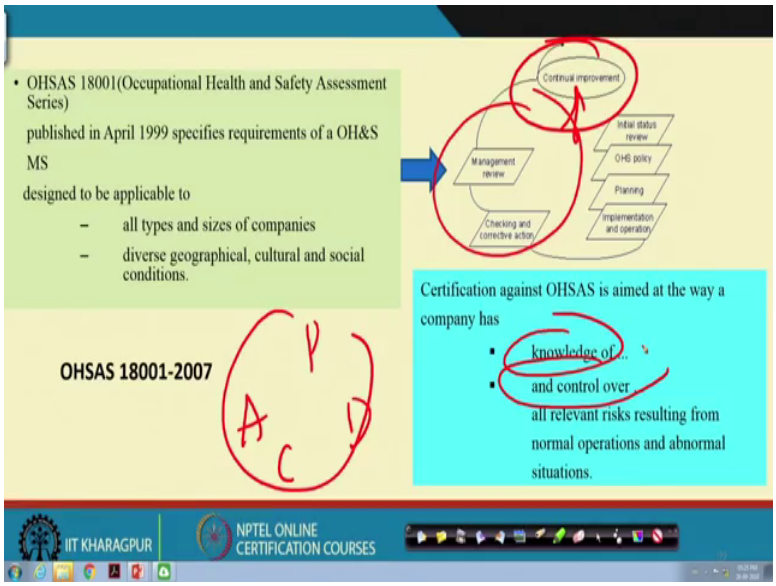

The OHSAS 18001 specification is developed on PDCA plan develop implement and check principal. If you anything, if you follow on PDCA, it will have continuous improvement. So, OHSAS 18000 specification he is developed. So, that occupational health and safety managements could be developed on the PDCA management.

If you have certification, OSHA certification OHSAS 18001, 2007 certification means you have knowledge about the requirements, you have understood how to control your hazards, understood implementation you have to do how you have to implement. OHS management will take care of the total implementation, but because of the specification you have got the knowledge's.

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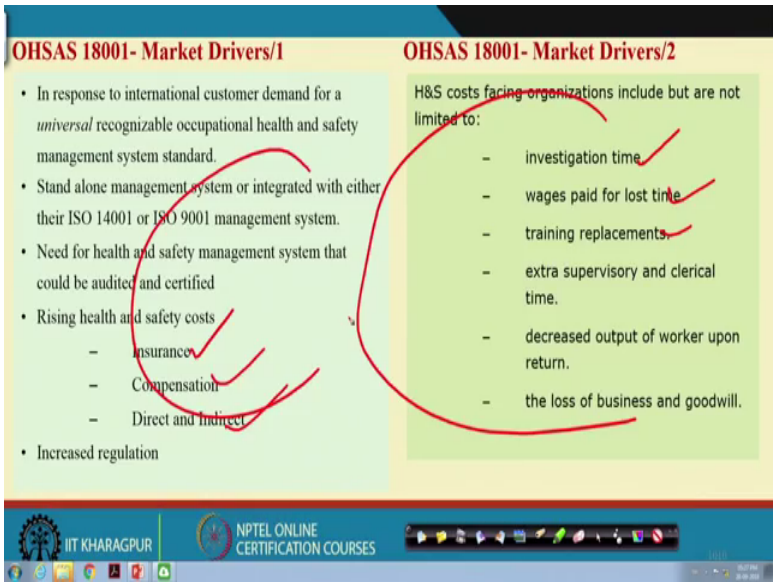

What are the market drivers for developing OHSAS 18001? So, international customer demand, see standalone management system we want standalone management system for the occupational health and safety, which could be which could be integrated with ISO 14001 ISO 19 9001.

Because, people do not want to have many management systems; management system basically follow the same thing. We should be able to integrate everything and have one integrated management system. It will the raise of safety cause health cause, in terms of in terms of insurance, compensation, direct indirect, it is increasing day by day. And regulations have becoming more and more rigid to protect people.

So, it will also reduce the increasing investigation time, wages, training if you if somebody is injured if you want to replace it is becoming very difficult in the competitive world to give training that much training. So, extra supervisors you have to put.

So, loss of business and goodwill you can incident happens stock values will come down major incident happens stock values will come down. All this things are the drivers for looking for OHSAS 18001 specifications.

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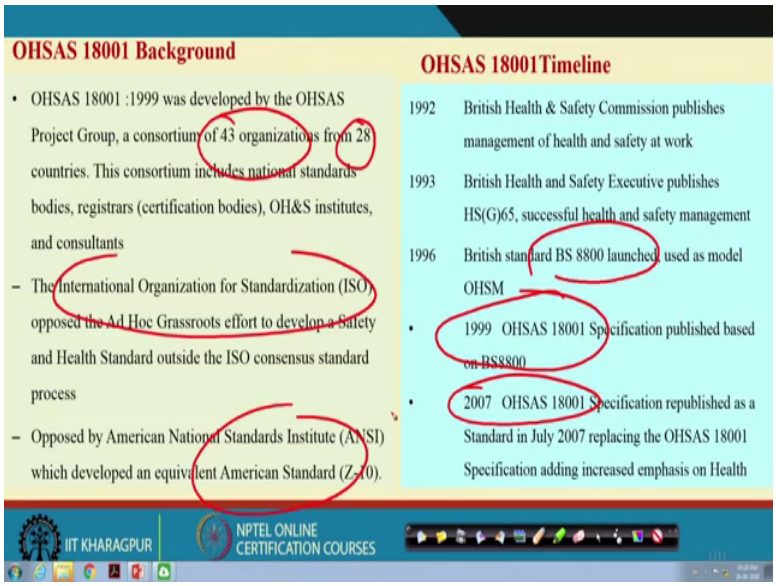

How is it developed in 1999 a group is form with a consortium of 43 organizations of 28 countries. This consortium includes national standard bodies, registers, OH and S institutes, consultants, and the practitioners from the industries. All those things forty 3 organizations they join together. Though there is some reluctance from the international organization or American institute, but this is for this is made, it is British health safety they have taken the lead in 1996 the BS 18 8008 800 is launched, which is similar to OHSAS 1801.

In 1999 this OHSAS 18000 specification is developed and 2007 the 18001 specification has been made standard. Please understand before making standard lot of trials, lot of experiments, lot of implementations have been done, when people get satisfied that specification is converted into standard.

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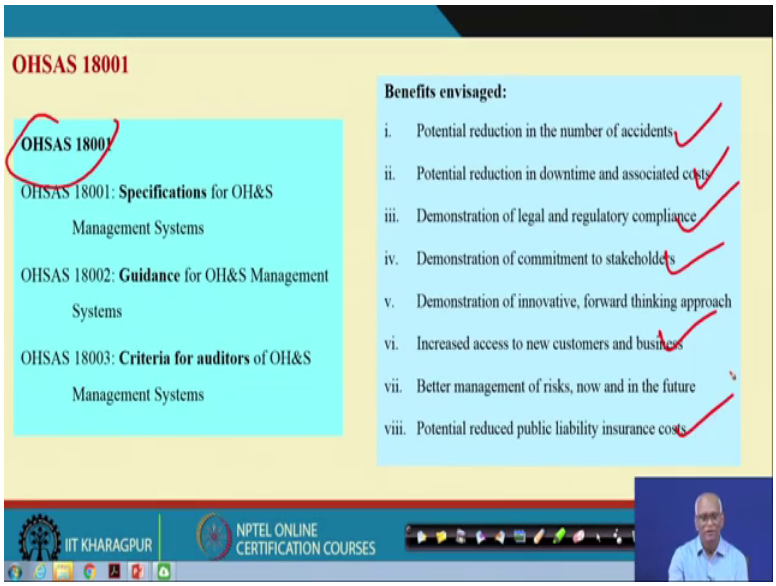

So, OHSAS 18001 is a specification for OHS management system. There is OHSAS 18002 also which will give some guidance guidelines OHSAS 18003 talks about that criteria for auditors, but main is OHSAS 18001. So, what are the benefits from this we have reduction accidents, because it is developed by the huge experience people, reduction of downtimes, legal requirements compliance, demonstration and commitment the leadership can demonstrate their commitment towards safety, the people employers employees will be very very happy, you will have new customers, the organizations where the in where the incidents are less customers would go there and buy the things.

So, better management is. So, public liability if anything happens gases go to environment liabilities more all those things will not happen. So, insurance cost will come down.

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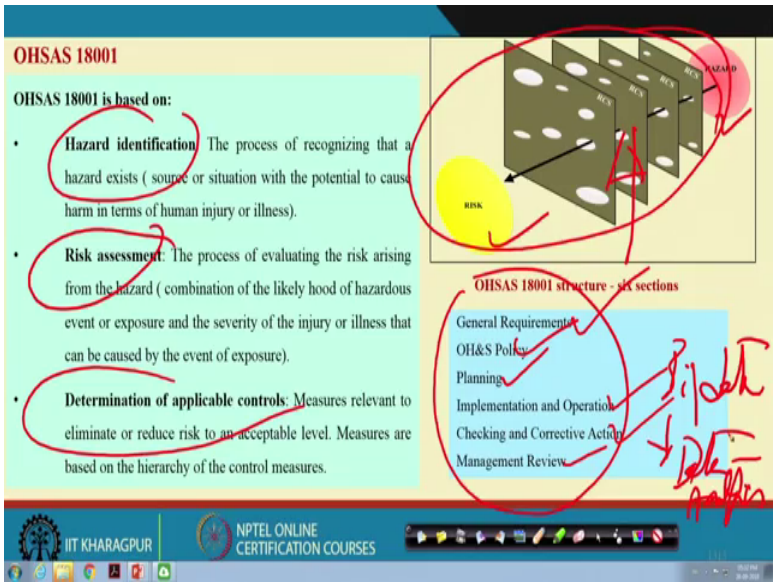

OHSAS 18001 please understand. It is also based on the fundamental definition we have given to OHS management that is OHSAS 18001 is also based on the hazard identification, risk assessment, putting the controls. So, that this hazard will not become a injury as incident.

So, OHSAS 18001 is also base the specification is based on the same principles of anybody talks about Hazard, risk, and interventions. The safety management safety is nothing but hazard the risk and interventions. If you understand this and you implement this and if you monitor this; that means, occupational health safety management is fulfilled.

So, this has got 6, 6 sections any management system will have the following these sections only will have requirements, it will have policy, objectives. So, planning, implementation, and checking and management review ok. In these things you can add many things. Now, in the management review people develop huge data, big data people call big data, and that they do analytics data analytics, and they get the predictions. That is part of management review right, right now management review the data collection and review analysis is very very high data analytics has come into picture.

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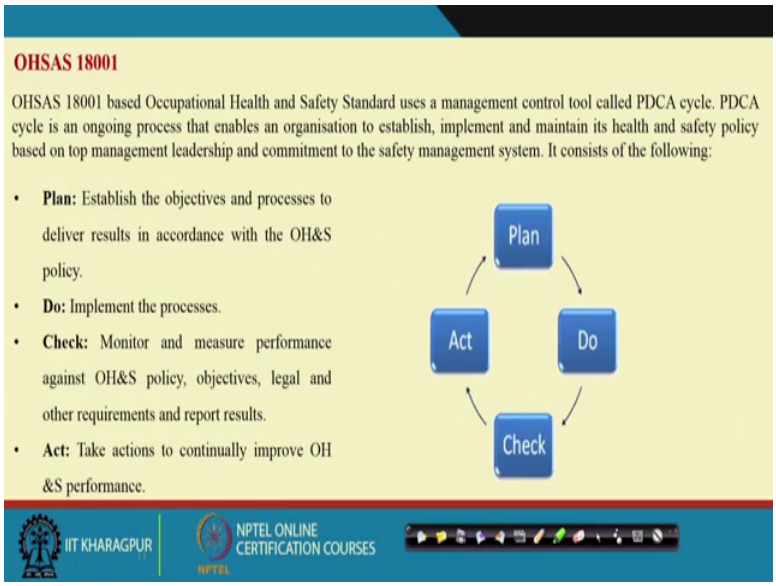

So, OHSAS 18001 is based on the plan do check and act PTUP. So, the management system which have used this principles of PDCA using 18001.

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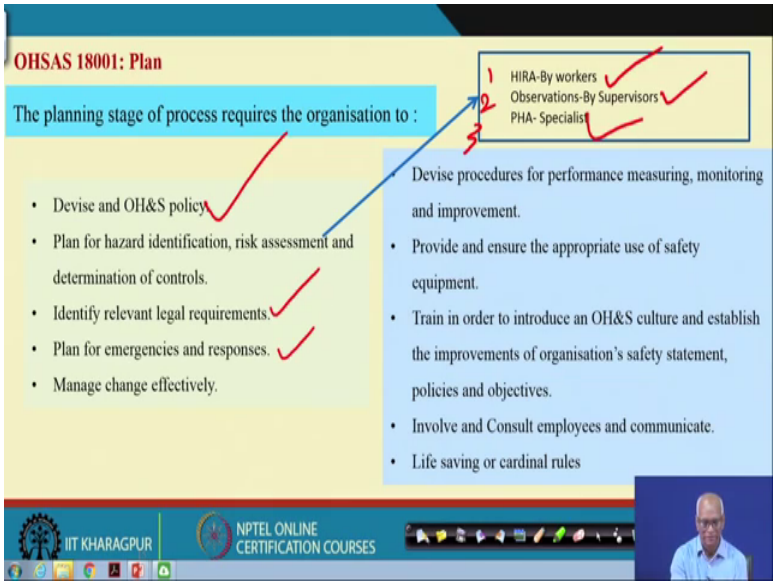

In the plan stage they divide the OHS policy, they divide the policy, they plan hazard identification risk assessment. In one of the very progressive industry the risk assessment hazard identification is done it 3 stages.

One is HIRA, Hazard Identification and Risk Assessment by workers, then officers and supervisors they do the observations, then finally, the hazardous processes the engineers

knowledgeable engineers using process hazard analysis are process management techniques they find out.

So, all these things will be incorporated in the planning stage of the OHSAS 18, base the OHS management based on OHSAS 18001. Relevant legal requirements, plan planning as a plan emergencies, manage changed effectively, what is managing change effectively when people change, you should bring the trained people properly. If, the equipment there is any change you should see how that change is conveyed to the people so, that no wrong thing will happen.

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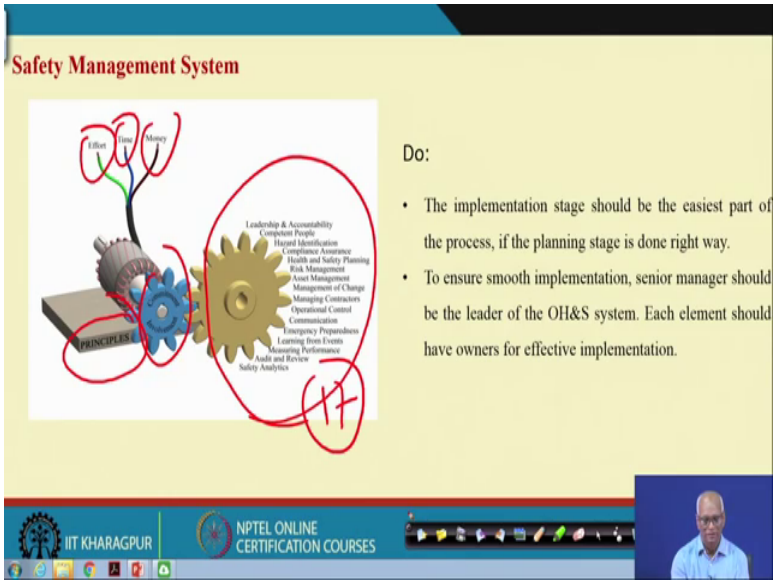

Do how to implement? People normally will have a implementation strategy account see one of the one of the industries; they have some 17 principles for implementation. Those 17 principles are based on the fundamental principles of the organization. Fundamental principles of that company, which is driven by effort, time, and money of the people involving all the people and commitment, involving all the people they implement this.

So, based on the fundamental principles putting effort time and money involving people they drive all these principal 17 principles that is called implementation, how do the implement?

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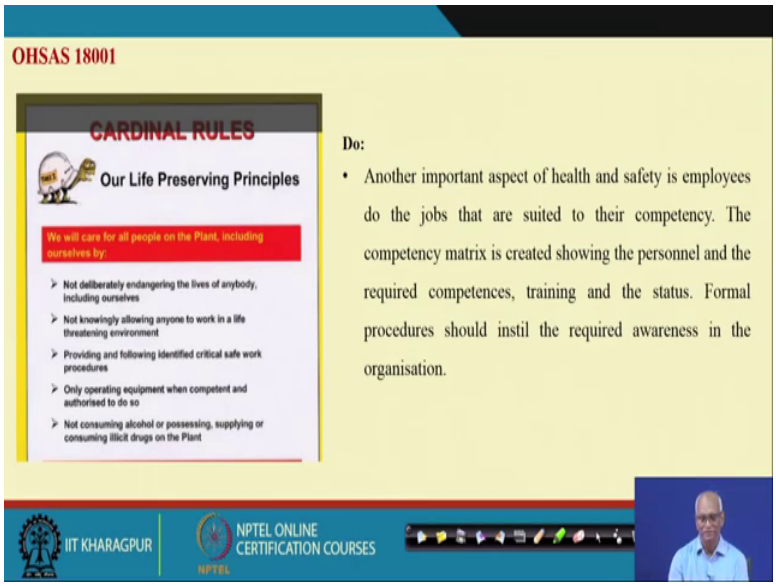

Our life saving rules people put drive life saving rules. So, if you violate it is very very big consequence to his employment life saving for rule for saving the lives this is how the implement. So, health and safety employees and the line managers together they do the implementation.

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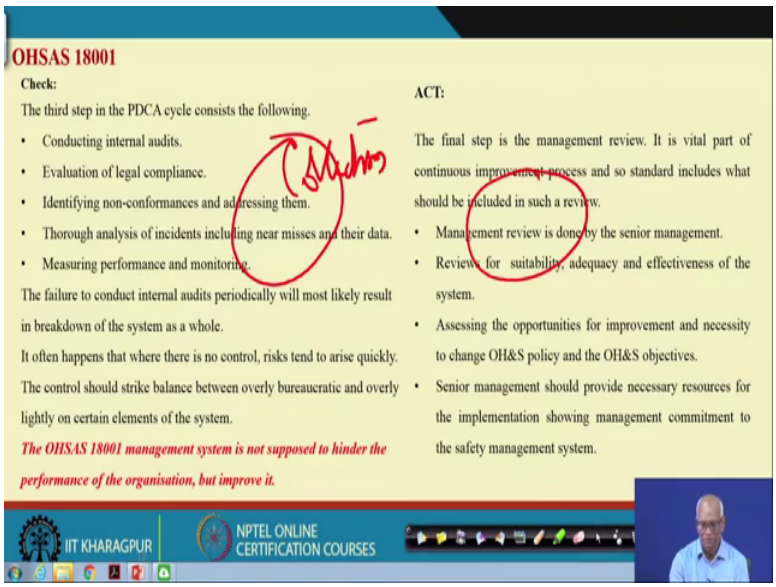

And, third is act that is in fine and (Refer Time: 33:40) check how do you check? You should have observations, you should have checking the conformances, checking the

procedures, checking the knowledge of the people, checking the energy of the leadership, checking the energy of the people, all those things you have to check in the third step.

And finally, you have to act. If I there is any gaps in the checking in the in the checking itself whole data analytics, data collection, you have to collect the whole data here and analyze here, data collection which is called a descriptive analytics. Finally, it is implemented the review which is called prediction and prescriptive analytics, that is that has come in the act check and act stage.

So, act is finally, review and how do you review? At what level you have to review what? It different levels you have to review, when I talk about will take a case study then you will understand all these things. So, how do you review? Only for complaints purpose if you review the safety management will not improve, you have you have to review for improving the system PDCA has to be finally, come to continuous improvement.

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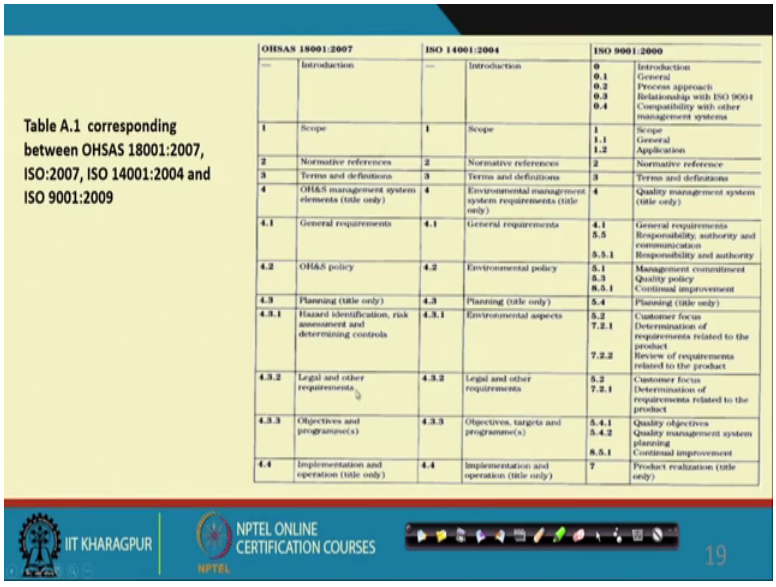

The OHSAS 18001 these are the causes. If you open the so, you have first scope references or OHS policy, planning, hazard, legal and other things objectives all these things, which we have we have talk resources competence training, communication, how do you communicate, documentation, control of document, operation controls. These are the specification your OHS should contain all these things based on PDCA.

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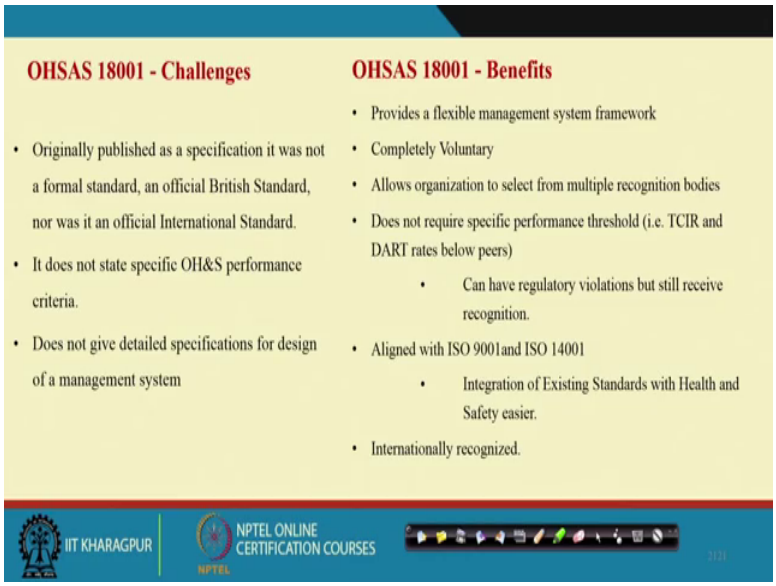

So, what are the challenges? Originally published as a specification it is converted into standard. It will not state the performance levels. So, you will have lot of benefit, the specification will not talk about the what levels of performance is to be there. It all depends on how you will implement?

So, provides flexible management complete, it is a voluntary thing, this is internationally recognized, this can be aligned with aligned with ISO 9 14001 9001.

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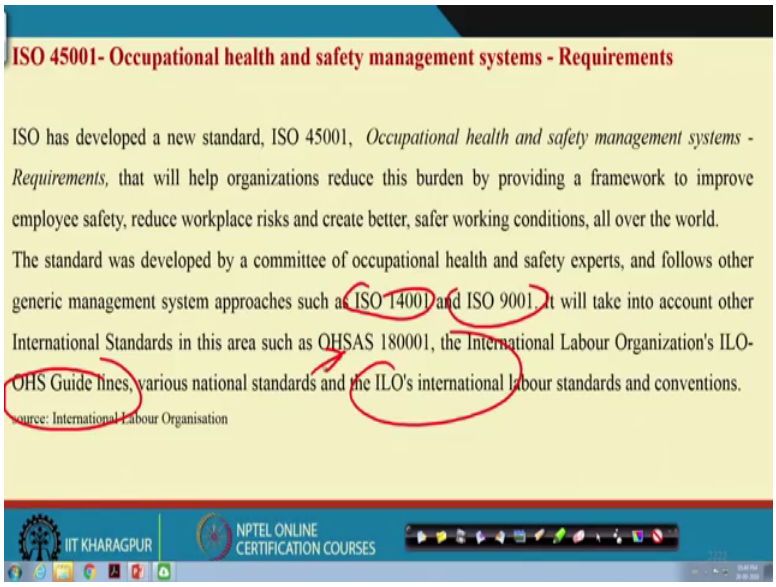

Now, in 20018 ISO has made specification, ISO 45001. It takes care of OHSAS requirement OHSAS 18001, it takes care of ILO's requirement ILO's guidelines and it is compatible with OHSAS ISO 14001 ISO 9001. It is based on OHSAS 18001. So, ISO standard will be. So, lot of ISO standards are there this also converted into ISO standard in the March of 2018 must be slowly organizations will be moving to implement it.

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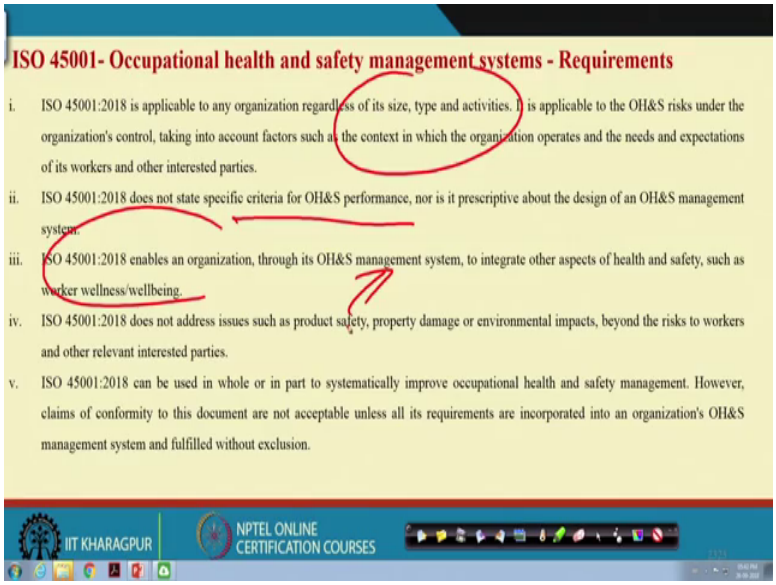

It is not OHSAS 18001 or ISO 45001 is not depending about the size, type of activities and industries. It is applicable to all the sizes all the type of industries, whether it is integrated steel plant, which produces 10 million ton plant, or it is a watch factory or it is a service industry like TCS or a supply chain industry.

Everywhere it is applicable OHSA ISO forty 5001 also did not talk about the specific criteria, but it will enables organization to build OHS occupational health and system management.

So, that is why the OHS management keep changing from organization to organization depending upon their agility, energy, resources and management commitment. Though people say we have got see OHSAS 18001 certification, it does not mean that you are got very good OHS management. The, ISO 45001 they do not do not talk about product safety property damage. So, it is systematically whole world will switch over to ISO 9000 45001.

Thank you, what did we discuss? We discussed for doing any work for making any product you require a specification, that will make making the product easy, buying the product easy.

Similarly, to address hazard risk and risk control system putting, how to put it? What level we have to put it? How systematically we have to put it? We required a specification.

So, OHSAS 18001 is the specification for occupational health and safety management system. OHSAS 18001 in 99 it is started as a specification, when specification matures it will become a standard. In 2007 it has become standard. Much more international nationalization has happened with ISO 45001 has come, taking care of all of the OHSAS 18001 I L O, I L O also got it is one management system.

So, it takes care of everything brought 1 ISO 45001, which could be which in line with ISO 9001, ISO 14001. So, next class we will discuss next session we will discuss one case study. How you can implement occupational health and safety management system base on the specification OHSAS 18001 2007.

Thank you.