Environmental Impact assessment
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Lecture 31
EIA – Air Assessment – Part I

Welcome to the course- Environmental Impact Assessment. Today, we are going to cover methods used for air quality estimation within the larger ambit of EIA methods, we will cover this topic in two parts. Today, we will see part one. As you may recollect our very first week of the lecture where we saw, the environment status and looked at the air in our environment, we saw that emissions generated by human activities are changing the composition of the Earth's atmosphere with the consequences for the health of people and the planet. And it is estimated that the global burden of disease contributed by air pollution has doubled. We saw that we changed the atmosphere mainly by generating emissions.

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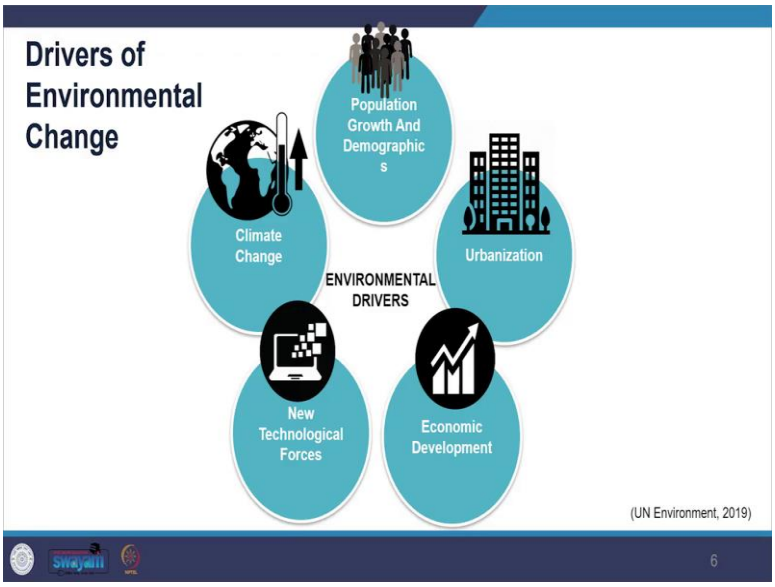

We saw the drivers of these changes include we have already seen this these are population, urbanization, economic activity, technology, and climates the drivers also include the behavioral choices we make including lifestyle and the conflict we create all these drivers are influenced by policies as well as what actions we take or how we respond to these situations as a nation through policy intervention. So, all this influences our environment.

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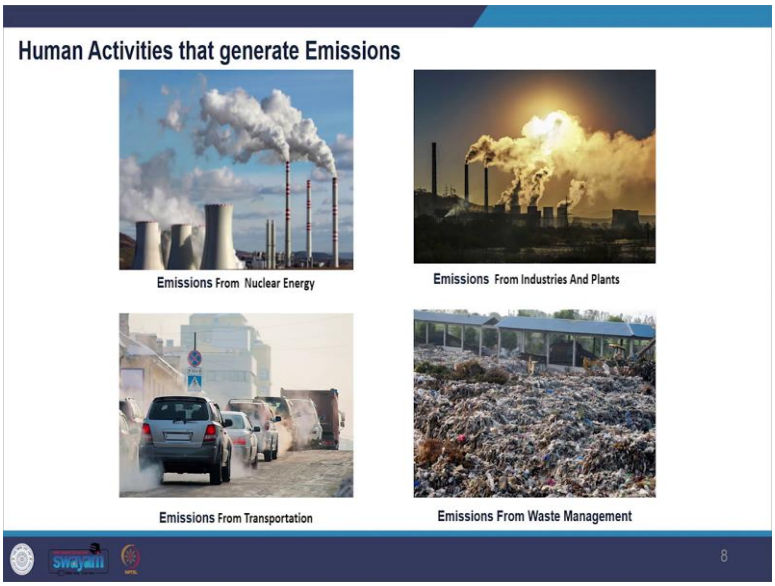

We also saw human activities that generate emissions from energy, transportation, industries, waste management, and so on, As you can see, in the image, various sectors contribute to greenhouse gas emissions. Every time a development comes, there is more like a requirement for energy production, there are requirements for more transportation, and more industries to come up and we have to assess what kind of impact it will have.

We may know that proposed developments may change the concentration of pollutants in the atmosphere, from the baseline situation whatever the situation at this moment, and would affect people, plants, animals, materials, and buildings, these effects can occur at various levels and can occur at local level regional as well as at the global scale. Most of these developments have pollution problems.

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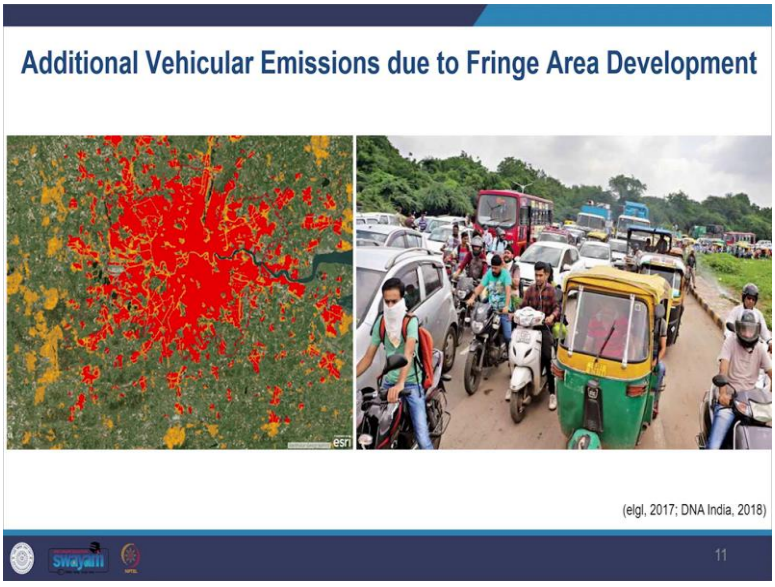

So, as you make as you can think about transportation industries, all these have pollution problems. Many developments such as commercial or residential areas, coming in the fringes also result in additional vehicle

emissions as people travel to use them. So, all the urban development that takes place also leads to more and more emissions.

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Many activities during the construction period cause pollution. Also, you may see opencast, mines, and queries, the potential exists for dust generation during the entire lifecycle of the developments not only during the construction period but during the entire lifecycle of this particular activity the dust will be generated, and with it, the potential for contaminants such as heavy metal, silicate and other air irritants which might be deposited in the surrounding areas.

So, you see how different activities in forensic environments and developments involving combustion may also give rise to both routine and non-routine pollutant emissions. You may also encounter a problem of odor, any odor or smell can be offensive if it is continuous and intrusive, and therefore, the potential effects of the release should be assessed carefully so, even that that can be taken up in the assessment process.

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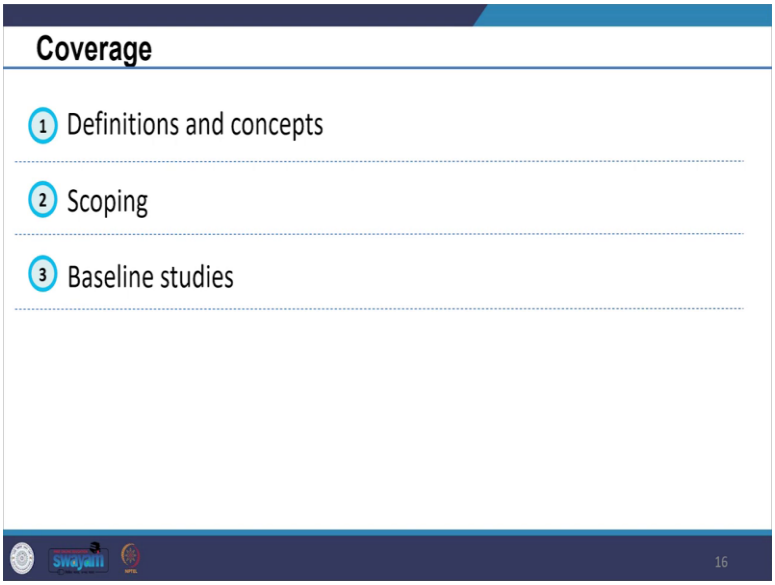

So, for today accordingly, our coverage will include we will look at the definitions and concepts. We will cover air pollutants and human health. We will look at body aspects we will look at the air pollutants the neutral and the built environment and then we will also look at odours. Further. we will look into scoping and baseline studies, what kind of tools are there while undertaking this what methods we adopt. So, we will look into pollution data availability on-site pollution monitoring, projecting the baseline, data, and so on.

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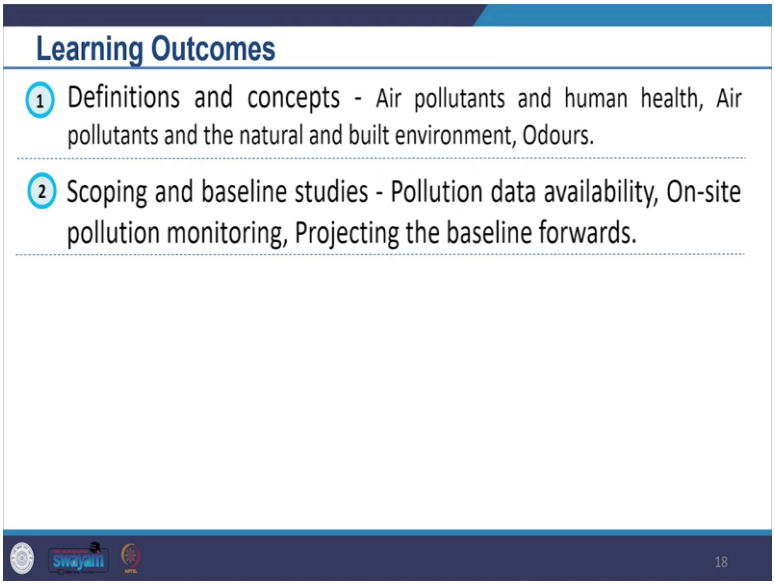

So, the expected learning outcomes. after completion of this session, you should be able to explain various concepts you should be able to define about air pollutants and then their impact on human health you should be able to identify the air pollutants, further, you should be able to identify or decide which methods to be used for scoping and baseline study purpose.

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So, looking at the definitions and the concepts, of air pollutants and their impact on human health, air pollutants can affect the health of a person, during inhalation and exhalation as the pollutants of this pollutants can cause inflammation sensitivity, can sensitize and even scar the airways and can affect lungs in

extreme conditions or dual and because of the long duration of exposure, they can have other impacts as well. And then, pollution can reside permanently in the body, they can contaminate foods and drinks and the impact can vary the impact can be very simple like irritation, or it can be very serious like illness or even early death in some cases.

So, health effects depend upon the type and amount of pollutants present, the duration of exposure, the state of health age, and the level of activity of the person exposed. So, as we have always seen the sensitivity of the receptor is also very important, where further we see that various national and international organizations have identified levels of air pollution concentrations. So, what the concentration should be which should not exceed in odour to protect human health.

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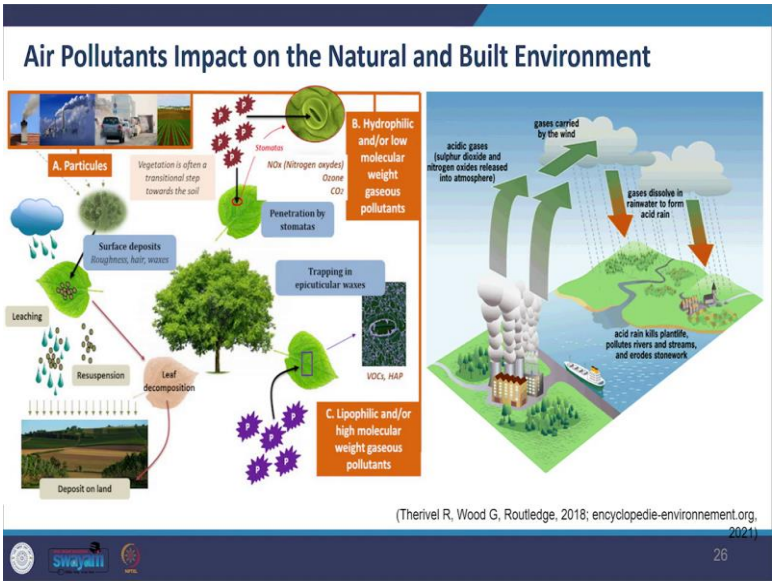

So, we see that, a range of levels mentioned by different agencies and organizations on this you may be also noticing that pollution damages the plants and animals caused by a combination of physical and chemical stressors. So, it is just not human health but it is also the health of the plants and animals around the effect of crops by causing leaf dis colorization reducing plant growth and eels, or contaminating a crop.

So, making it unsafe to eat, they also affect terrestrial and aquatic ecosystems at level local or regional levels. So, you see those aquatic ecosystems terrestrial and aquatic ecosystems are also affected by it, you may think of acid rain as well at the surface of the medium it falls on so, it also has other impacts like there are a lot of monuments that are getting damaged, but such kind of things.

They can be nutrient imbalances due to the deposition of net nitrogen base compounds such as ammonia on sensitive ecosystems. For example, we can see upland grasslands sensitive water courses, and lakes or ancient woodland. So, all these are impacted by the imbalance in the nutrients such imbalance can compromise the long-term survival of the habitat. So, if any kind of such change happens then it can, in the long run, it can impact the sustainability of the habitat itself.

The effect of air pollution on vegetation and the ecosystem can be related to pollutant concentration, which is also known as critical levels. So, you may know this critical level, which is the pollutant concentration level or the deposition of the pollutant, which is also called a critical load. So, we are looking at the two terms here critical level and load. The critical level is the pollutant concentration, critical load is the deposition of a pollutant.

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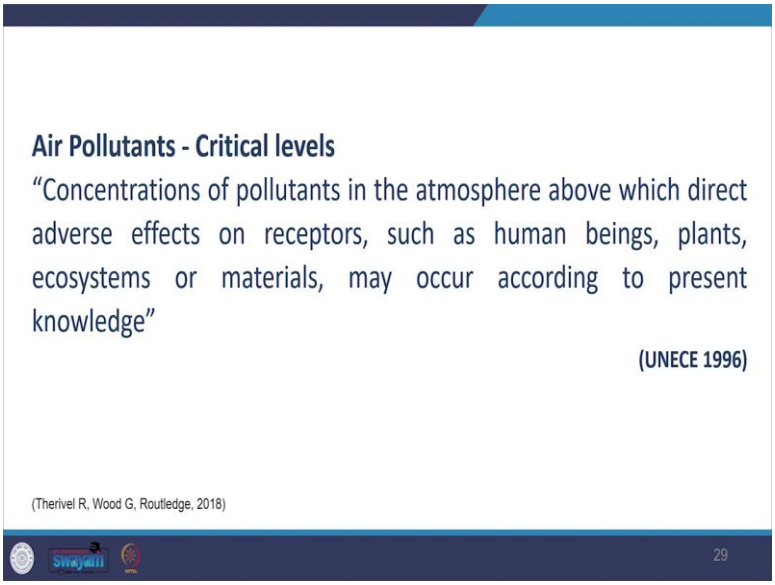

Critical levels are defined they are the concentration of the pollutants in the atmosphere which direct adverse effects on the receptors. So, anything above the critical level will have an impact on the receptors such as we could be the receptors, it could be the plants, it could be the ecosystem, or any kind of material. Wherever, so, far as we know about it, the critical level is the gaseous concentration of the pollutants in the air.

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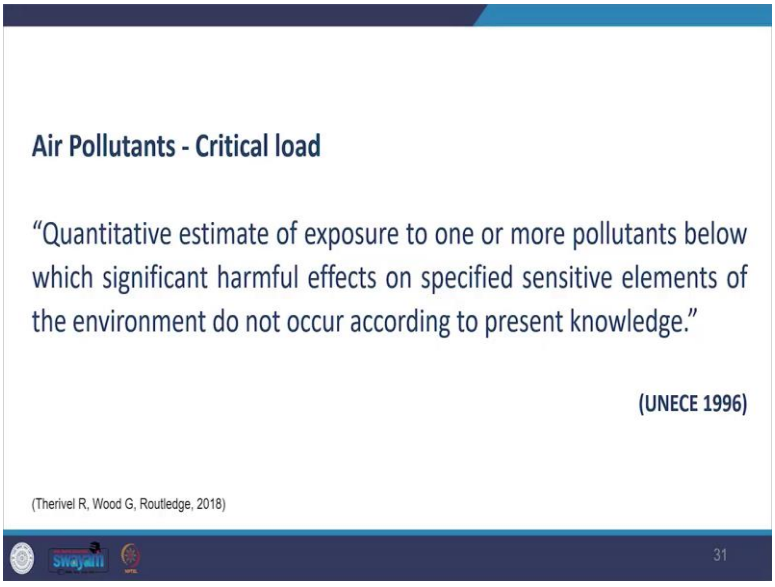

So, you can learn about the two terms here, the critical load is the quantity of pollutant deposited, taking it from the air to the ground. So, we see pollution problems for buildings can be short-term and reversible such as soiling by smoke, which can be removed by cleaning so, these can be handled whereas the effects of acid

deposition can be cumulative and irreversible by causing erosions and crumbling of the stone. So, there are certain that you need to look at whether these damages are reversible or irreversible.

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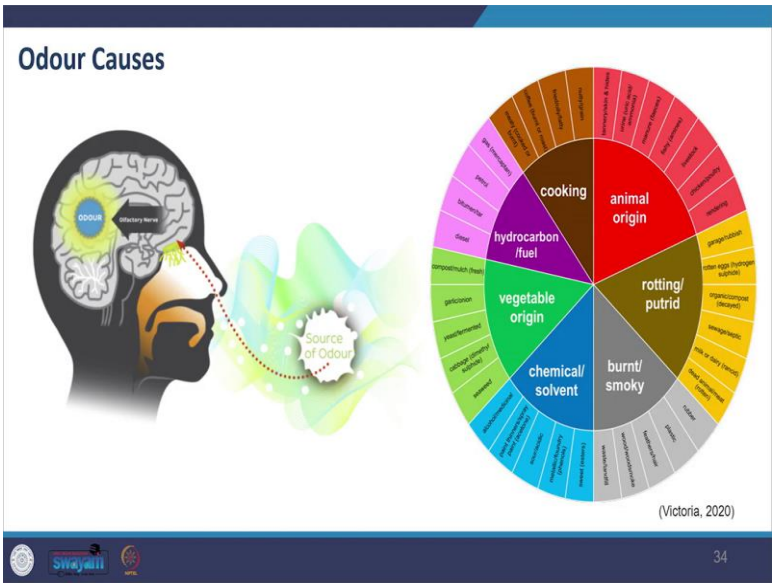

Now, looking at odors, smell tends to be associated with a mix of chemicals that interact to produce what is detected as smell. Odour is an olfactory response you take it from the nose to a chemical or chemicals. This is the key response of concern within an environmental and social impact assessment EIA process and not the potential health effects of the chemicals themselves.

So, not the chemical but then, how you absorb it through that passage, smells are of concern because these can lead to disamenity, annoyance, new sense, or complaints where people would complain about its continuous exposure. So, there is a problem. And we see that this can come from many sources and can have implications on the adjoining land use. So, when you deal with land use, then there can be problems about what is adjoining to you and whether it is a problem of odor in that, we see that odor, and smell a subjective to the individual and response can vary.

So, it is a very subjective thing odor and smell, odor or smell, before an adverse effect can exist individuals must experience exposure to odor for odor exposure to occur there must be an odor source. So, you see that there must be an odor source and a pathway that can connect the receptor to the source and the scale of the exposure can be determined by reference to parameters.

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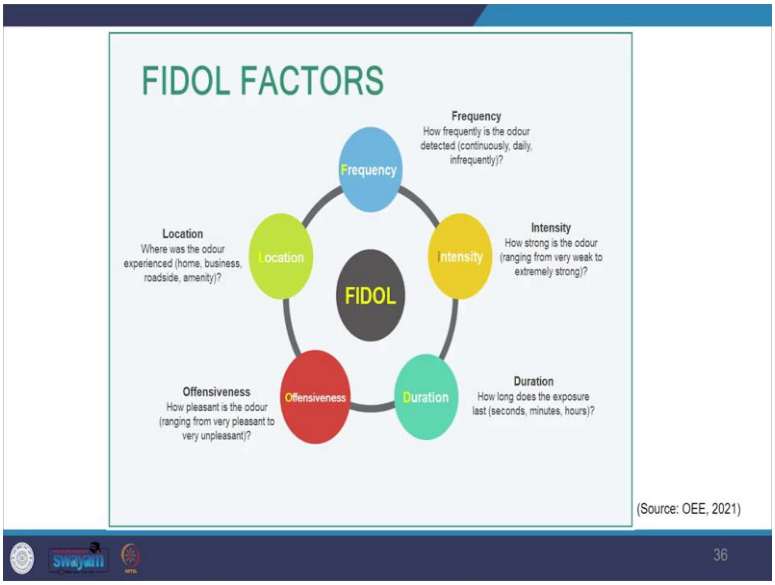

So, you see there are certain parameters known as FIDOL, which are frequency intensity duration, offensiveness, and location. So, these are the parameters through which you look at the exposure level. The first four of these factors first for that is frequency, intensity, duration, and offensiveness relate to the magnitude like how much it is or the scale of exposure, how much the individual is exposed, and then the latter which is the location relates to the sensitivity of a particular receptor population. So, who is on the receiving end? So, it is the last one you see depending on the receptor.

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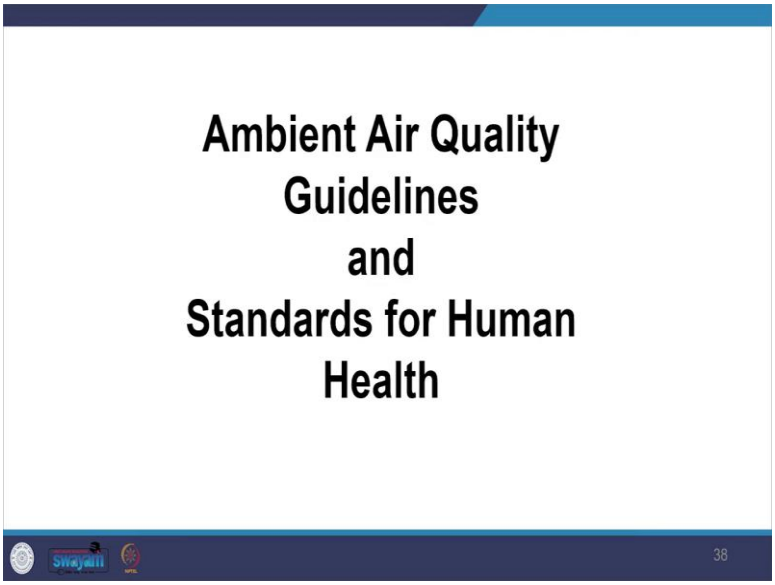

Now, moving on, let us briefly revisit ambient air quality guidelines and standards for human health WHO World Health Organization provides values. So, it gives us values reference values, the WHO guidelines values are based on health considerations alone.

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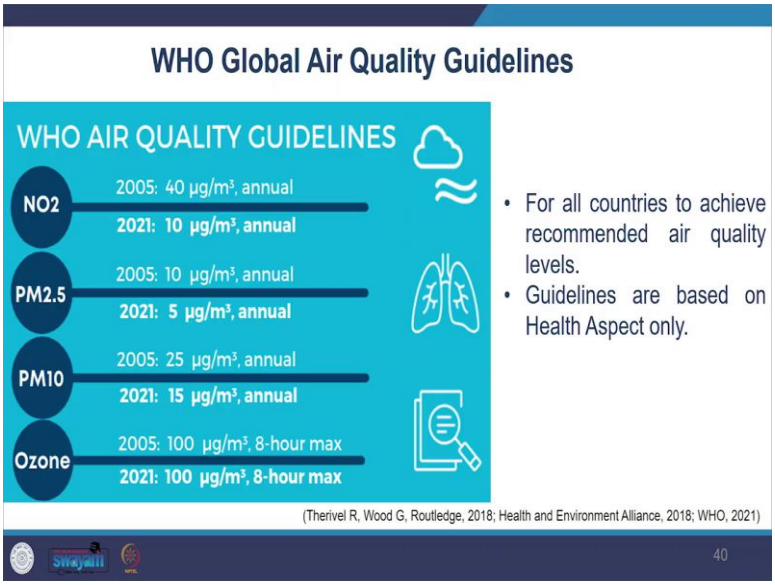

So, they only look at the health consideration from a health perspective, what is important, what is what are the ranges which are of concern to us, and they do not consider the technical feasibility or the economical or political or social dimension of attaining those goals. So, WHO guidelines are completely focused on health considerations? You may know that air quality standards vary nationally around the world. So, you would see that the WHO is only based on health considerations. So, based on the socio-economic and political conditions, you see that the standards air quality standards vary nationally around the world and it is not strictly aligned with the WHO guidelines.

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We also see that International Finance Corporation IFC provides performance standards so the standards are also given. It is an international benchmark for environmental and social risk management. Also, the Environmental Health and Safety EHS guidelines are available which provide technical advice with general and industrial-specific examples of Good International Industry Practice GIIP to meet the specified performance standards. So, they also provide guidelines for that.

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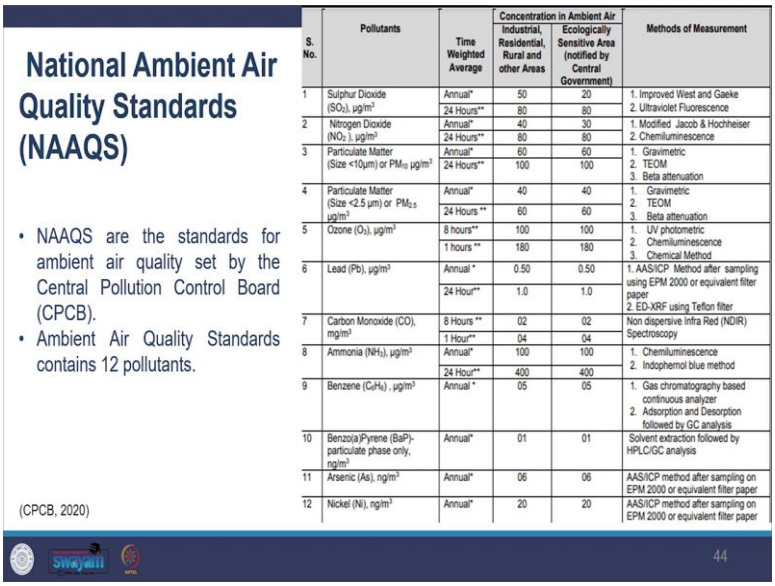

S. No.	Pollutants	Time Weighted Average	Concentration in Ambient Air: Industrial, Residential, Rural and other Areas	Concentration in Ambient Air: Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
1	Sulphur Dioxide (SO_2), µg/m³	Annual*	50	20	1. Improved West and Gaeke 2. Ultraviolet Fluorescence
		24 Hours**	80	80	
2	Nitrogen Dioxide (NO_2), µg/m³	Annual*	40	30	1. Modified Jacob & Hochheiser 2. Chemiluminescence
		24 Hours**	80	80	
3	Particulate Matter (Size <10µm) or PM_{10} µg/m³	Annual*	60	60	1. Gravimetric 2. TEOM 3. Beta attenuation
		24 Hours**	100	100	
4	Particulate Matter (Size <2.5 µm) or $PM_{2.5}$ µg/m³	Annual*	40	40	1. Gravimetric 2. TEOM 3. Beta attenuation
		24 Hours **	60	60	
5	Ozone (O_3), µg/m³	8 hours**	100	100	1. UV photometric 2. Chemiluminescence 3. Chemical Method
		1 hours **	180	180	
6	Lead (Pb), µg/m³	Annual *	0.50	0.50	1. AAS/ICP Method after sampling using EPM 2000 or equivalent filter paper 2. ED-XRF using Teflon filter
		24 Hour**	1.0	1.0	
7	Carbon Monoxide (CO), mg/m³	8 Hours **	02	02	Non dispersive Infra Red (NDIR) Spectroscopy
		1 Hour**	04	04	
8	Ammonia (NH_3), µg/m³	Annual*	100	100	1. Chemiluminescence 2. Indophernol blue method
		24 Hour**	400	400	
9	Benzene (C_6H_6), µg/m³	Annual *	05	05	1. Gas chromatography based continuous analyzer 2. Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP)-particulate phase only, ng/m³	Annual*	01	01	Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m³	Annual*	06	06	AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m³	Annual*	20	20	AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

You can see the snip of those particular guidelines here. We also see that in the Indian context, we have CPCB, which provides us the complete standard lists. The link is also given to you to look further. So, you see the National Ambient Air Quality Standard. We also see air quality guidelines and standards for vegetation and the ecosystem you may reflect and understand that the effect of air pollution on vegetation and the ecosystem is relatively complex and it is an area that requires cooperation between a quality scientist and ecologist to properly assess the significance of the effects within the context of assessment framework.

So, it is a complex subject all together as a team to be looked into and it needs interdisciplinary people to work on together. So, critical load for deposition. So, when we look at the vegetation, the critical load for deposition into sensitive ecosystems has been specified by UNECE which is the United Nations Economic Commission for Europe. So, according to them any exceedance of the critical loads, any or beyond this level of the critical load is used as an indication of the potential for harmful effects to occur. So, this is used as a cutoff line anything beyond this critical load is seen to be damaging to the environment.

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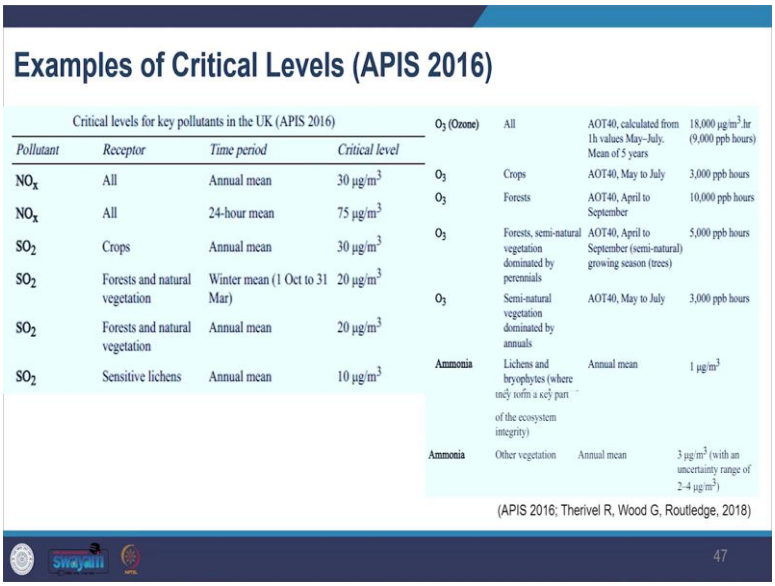

Critical levels for key pollutants in the UK (APIS 2016)

Pollutant	Receptor	Time period	Critical level
NO_x	All	Annual mean	30 µg/m³
NO_x	All	24-hour mean	75 µg/m³
SO_2	Crops	Annual mean	30 µg/m³
SO_2	Forests and natural vegetation	Winter mean (1 Oct to 31 Mar)	20 µg/m³
SO_2	Forests and natural vegetation	Annual mean	20 µg/m³
SO_2	Sensitive lichens	Annual mean	10 µg/m³
O_3 (Ozone)	All	AOT40, calculated from 1h values May–July. Mean of 5 years	18,000 µg/m³.hr (9,000 ppb hours)
O_3	Crops	AOT40, May to July	3,000 ppb hours
O_3	Forests	AOT40, April to September	10,000 ppb hours
O_3	Forests, semi-natural vegetation dominated by perennials	AOT40, April to September (semi-natural) growing season (trees)	5,000 ppb hours
O_3	Semi-natural vegetation dominated by annuals	AOT40, May to July	3,000 ppb hours
Ammonia	Lichens and bryophytes (where tney form a key part of the ecosystem integrity)	Annual mean	1 µg/m³
Ammonia	Other vegetation	Annual mean	3 µg/m³ (with an uncertainty range of 2-4 µg/m³)

(APIS 2016; Therivel R, Wood G, Routledge, 2018)

There is also the UK Air Pollution Information System, which provides a useful guide to critical loads and different levels. So, you can see the example of the snippet here.

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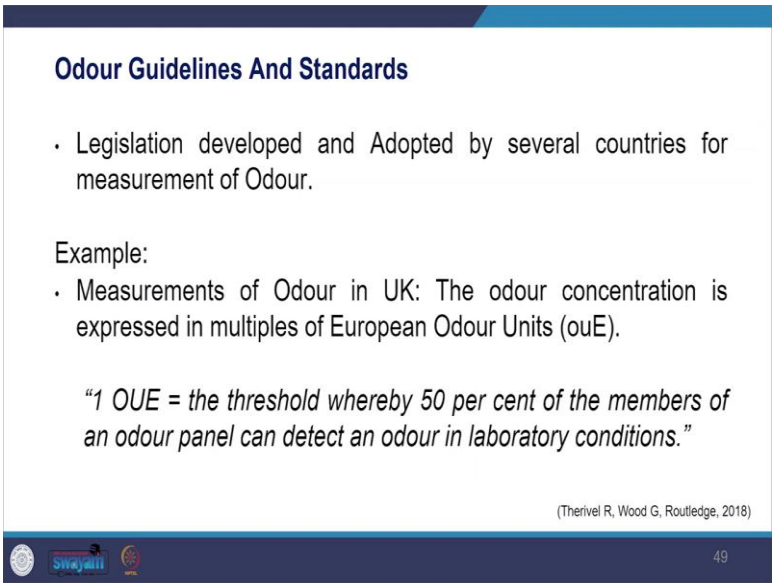

There are also odor guidelines and standards, several countries have developed and adopted legislation for the measurement of odor, such as Australia, Belgium, Canada, Denmark, Germany, and so on. However, there are no internationally recognized standards for the assessment of odor. So, we do not have industrial we do not have international standards for this. One approach adopted in the UK which we can see here involves measurements of odor which are based on the European odour unit (ouE), which you can see European odour unit.

The definition of 1 or OUE represents the threshold whereby 50 percent of the members of an odor panel. So, whichever is the panel, the in that 50% of the members can detect an odour in the laboratory conditions. So, when 50 percent of People can detect that particular odour or smell then it is considered to be 1 unit. In India, Schedule 2 and Schedule 6 general standards for discharge of affluence under Environmental Protection Rules 1986 prescribe that all efforts should be made to remove unpleasant odors as far as practicable.

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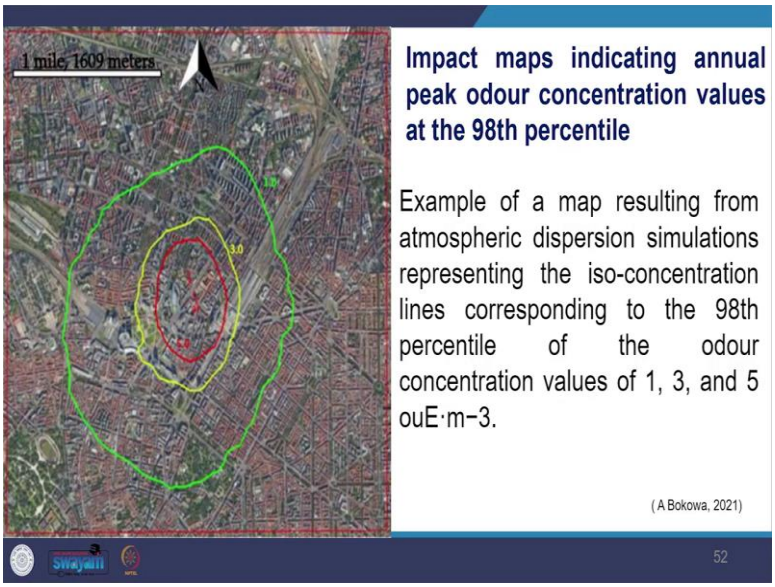

So, further,r we looked at in terms of fidol parameters, fidol parameters, and odour concentration as the 98th percentile takes account of the frequency intensity and duration elements of the equation. So, here you see that the 98th percentile is taken care of for the location dimension different concentration thresholds may be applied to different land uses. So, as for the land use, whatever is the land use. So, you might be very sensitive about the restaurant or the industrial or the commercial location or the hospitals being there.

So, accordingly, you may see that here in the image you can see the example of a map resulting from an atmospheric dispersion simulation representing the ISO concentration lines corresponding to the 98 percentile of odour concentration values you can see different values 1, 3, and 5 which are given here.

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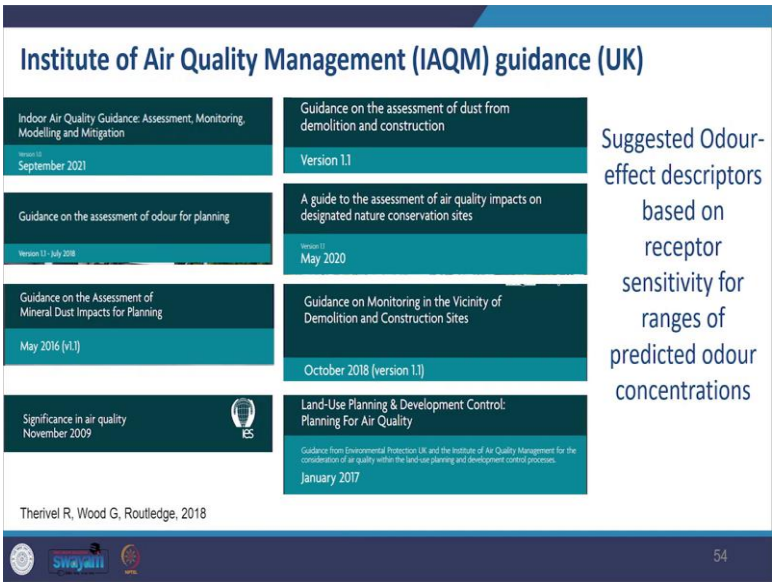

We also see the Institute of Air Quality Management guidance. This is also provided this institute provides suggested odour effect descriptors it gives certain descriptors which are based on receptor sensitivity. So, our sensitivity, to particular odours and ranges has predicted odour concentrations. So, it gives us our sensitivity to the concentration of odour, however, the practitioner is required.

So, for this purpose, you would need practitioners to use professional judgment and choice of criteria and must be able to justify their choices. So, you can see the Institute of Air Quality Management guidance here, there are very clear emission limits and standards in every country, and may vary with location. So, we see that air quality standards refer to the levels of air pollution to which people and ecosystems are exposed.

Another type of legislation standard is the emission standard, which specifies the maximum amount of concentration of pollutants that can be emitted from a given source. Emission standards are usually derived from consideration of the cost and effectiveness of the available control technology. So, every nation depending on the technology available to them, would be specifying the emission standards.

Now, there is a lot of pressure on the reduction of the emissions. So, you have been reviewing all the ongoing activity at the global level. So, there is a lot of pressure on the reduction of the emissions, in particular with the climate change which we are addressing urgently right now, and the emphasis is laid on the technology development and use of clean fuels. So, not only it is about the emission, controlling the emission, but the emphasis is also on improving the technology as well as using the clean fuel.

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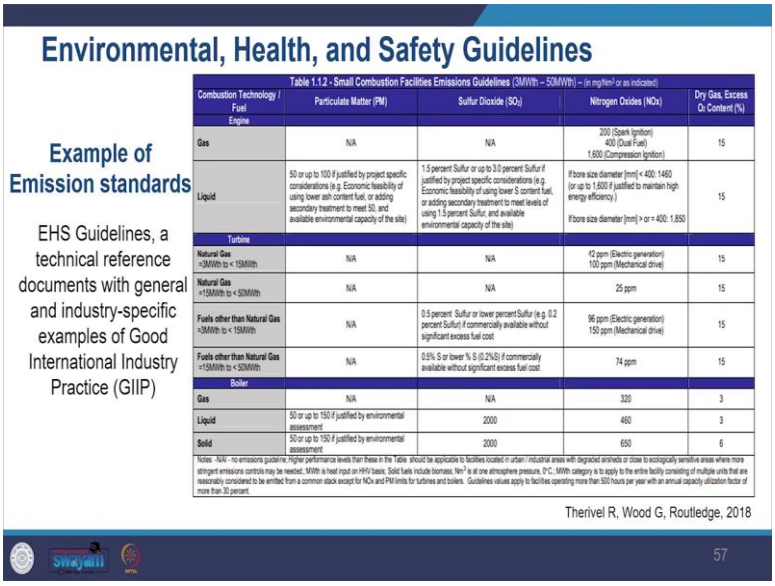

You may refer to IFC, Environmental, Health and Safety guidelines, and good international industry practice.

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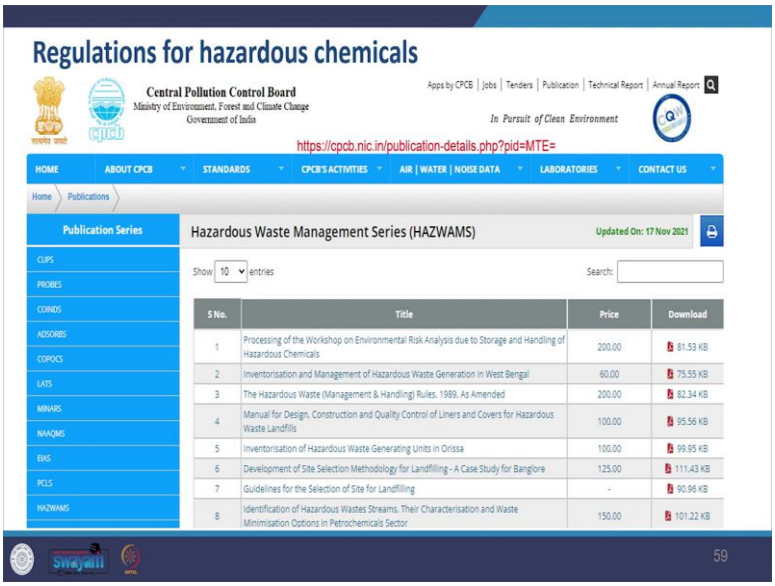

There are also regulations for hazardous chemicals. So, in the case of proposed developments, whatever development is coming, that involves materials that could be harmful to people in the event of an accident, the assessment should include an indication of the preventive measures to be adopted.

So, what kind of Prevention you are going to adopt? So, such an occurrence is not likely to have a significant effect. So, you need to look at all the probable accidents that can happen, and what kind of waste would be generated, you may also refer to the CPCB website and the link is also provided to you for the regulation of hazardous chemicals. So, these are some basic concepts. So, these were some basic concepts that we looked at.

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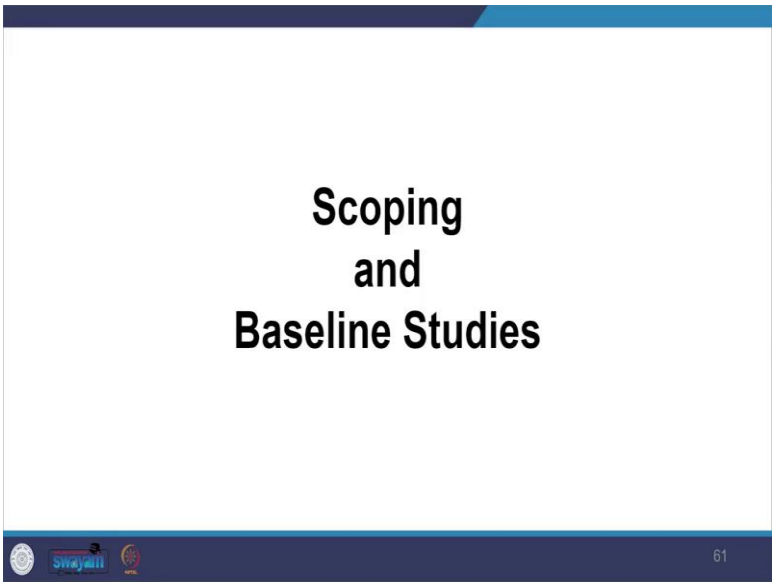

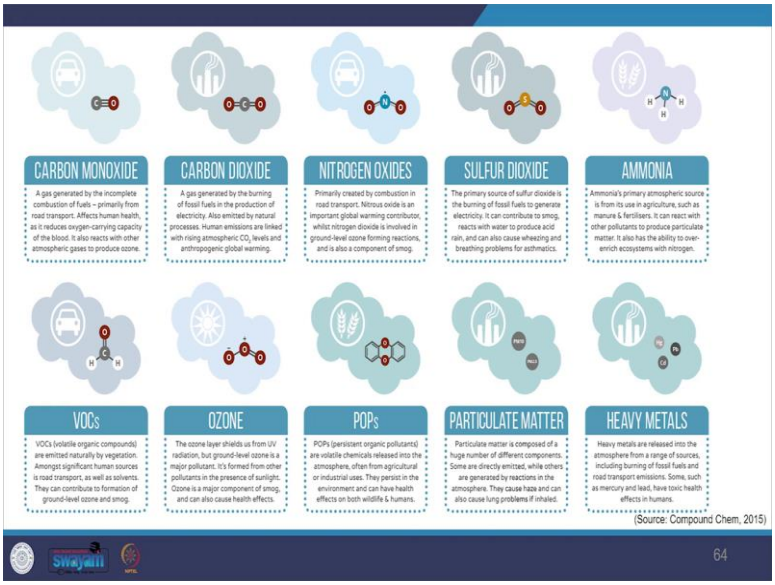

Now, moving on, let us look at methods for scoping and baseline studies. There are very stringent laws and guidelines in every country for air quality. So, air quality you may see and you must have experienced that there are very strict laws while you drive your car while industries are set up. So, during the scoping stage air quality impacts should be considered in the EIA process after a thorough discussion with the regulatory authorities to then you should take them you should have a discussion with the regulatory authorities on that you would be able to decide which pollutants to consider and which not to consider and whether you will need to address all the impacts.

So, once you look at the regulations, you will know what parameters to be covered and whether the smell aspect has to be taken or not. Also depending upon the development project, whichever project you are dealing with many atmospheric pollutants may be considered for assessment purposes it could be nitrogen oxide, Sulphur dioxide, and so on. So, the list is usually given in the framework. And then also you may look at there might be there must be gases greenhouse gases which you might have to consider given the climate change and our international agreements on those.

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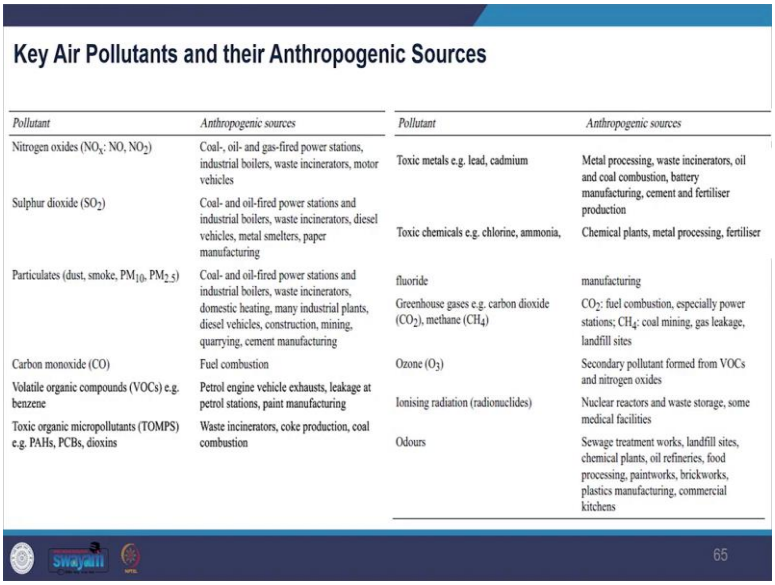

Further, you may also consider other pollutants which may harm the health as given by WHO guidelines. While undertaking the scoping process in EIA, you need to understand that a particular atmospheric pollutant will depend on the nature and scale of the development it will depend upon the sensitivity of receiving environments and the baseline conditions. So, the receiving environment how sensitive what is the sensitivity was the range of that particular environment to receive that pollutant and what is the already existing condition that we look at in the baseline condition?

And also, on likely changes that may occur about this. So, what kind of changes when your development comes, what kind of changes will happen because of this in the baseline condition, and then also you look at the sensitivity of the receiving environment, you should also essentially check if the baseline condition of an area under study would change irrespective of the proposed developments, whether your development happens or not have been, but then you should check whether those the baseline condition would, in its own is going to change or not.

So, that is important to check. So, you might keep a check on whether it might reach a higher-level threshold level where you are things might change, it is important to know because if the area is already under stress, any increase in amount will exceed the permission levels you need to be careful about that in the projects, which are less likely to have impact on air quality and therefore, removes from the scope there are also accidental considerations should be taken.

So, whenever you are not it is not coming under the scope, but then accidental consideration should be taken. In such cases also, you must take note of any sensitive uses such as hospital houses, industrial premises, ecologically sensitive sites, and so on in and around the site of the study. So, you need to be very cautious about the adjoining land use, and land cover that is there.

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You may encounter issues of odor from sewage treatment work, chemical plants, paintwork, food processing factories, brickworks, and commercial kitchens. So, all these you can have this odor issue as well odor often

generates great annoyance. So, there might be a lot of complaints from the occupants around when residents are subject to them and even their surrounding areas.

So, now looking at the pollution data availability. So, from where do you get this data? So, it is advisable to undertake an in-depth study. So, the first step what we do is to undertake an in-depth study before the impact studies are undertaken for the proposed development. So, you can obtain baseline data from existing pollution monitors, you may require data from one or more locations and study areas to assess the amount of pollutant present.

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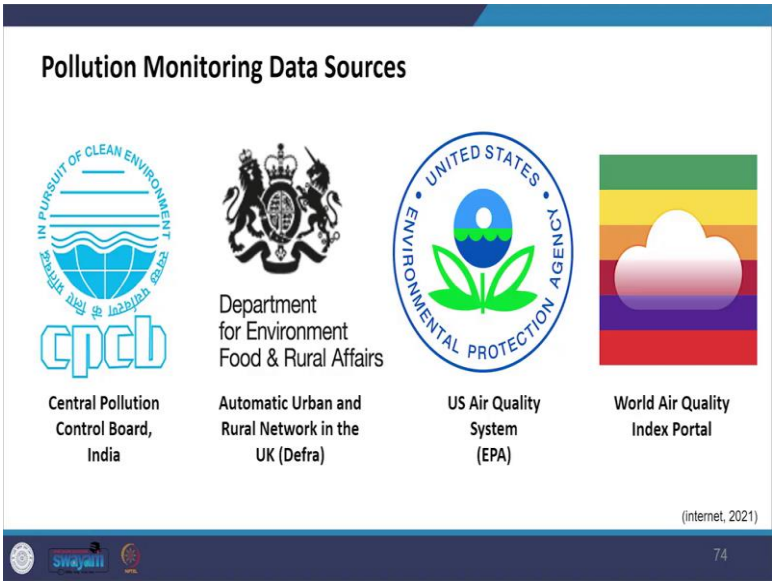

So, you might choose a specific location to collect data in many countries, where national or local monitoring network exists. So, there are already networks which are there which monitor air quality data and monitoring may also be undertaken by universities and organizations. So, there are a lot of universities and organizations that should regularly monitor and maintain data. So, you can also retrieve from them most of the pollutant data from national networks that are often freely available online.

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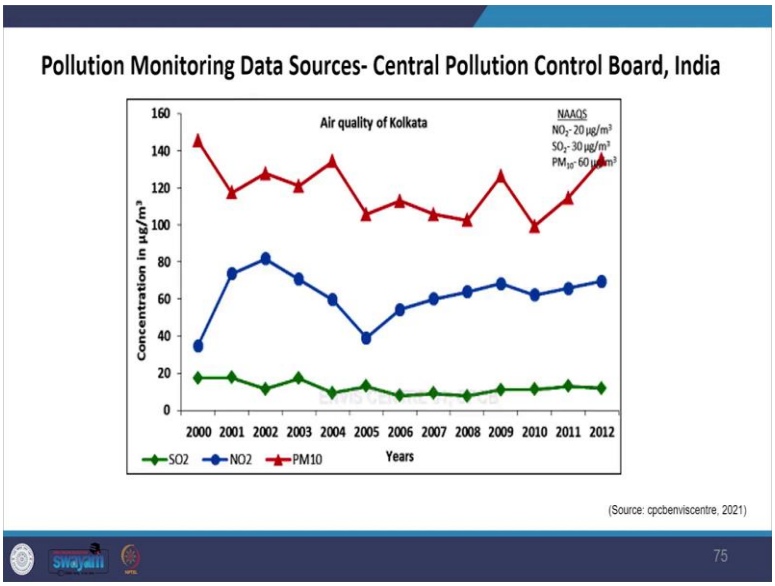

So, you can use them as well, for example, the central pollution control board in India.

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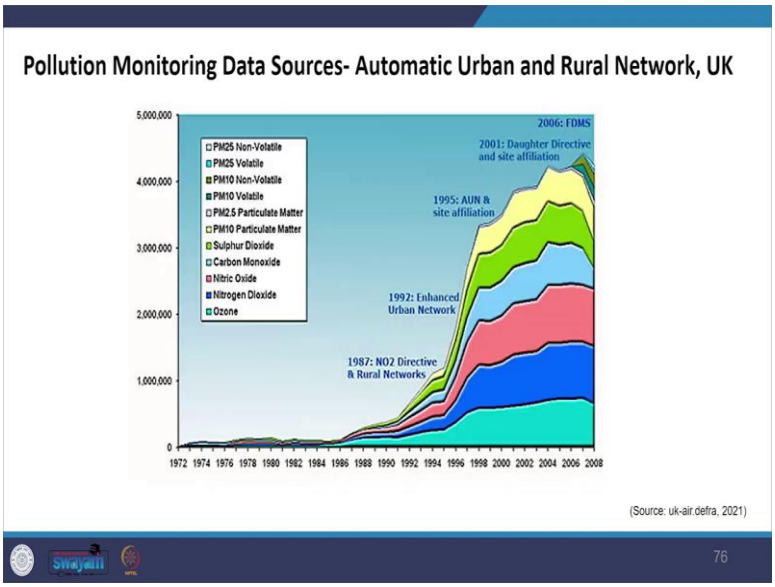

Then you have an automatic urban and rural network in the UK.

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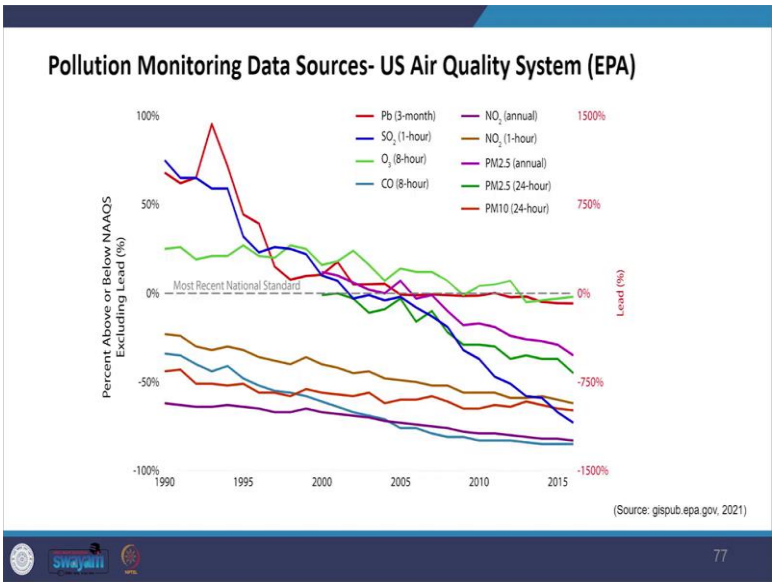

Then you also see our air quality system.

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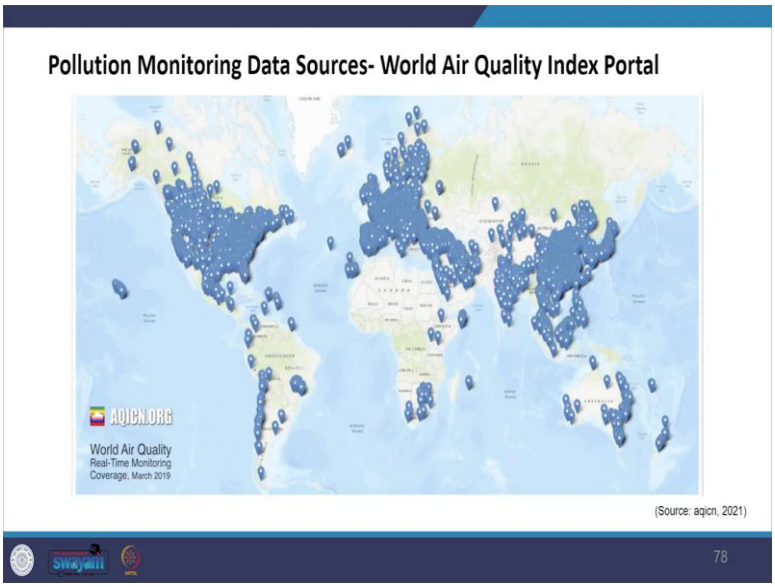

You can also look at the World Air Quality Index or they can be requested from relevant authorities. So, you can ask for data if they are not available freely online. So, you can take information from them.

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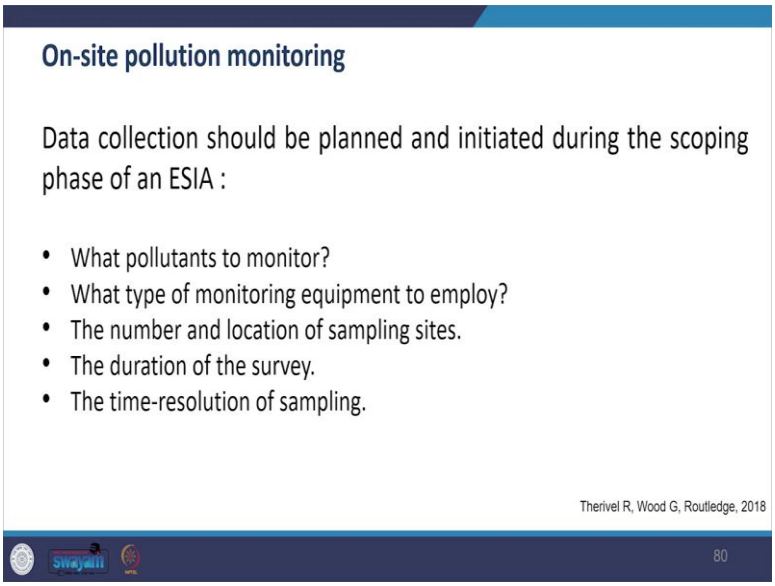

Further, one is you can do the desktop other is you can take on-site pollution data by monitoring if you observe that the pollution data are not available or are insufficient, then you can undertake on-site baseline monitoring as per your requirement for the particular project data collected should be planned.

So, you need to plan well ahead of time and initiative during the scoping phase itself. So, you need to decide in the scoping phase and you should look at what pollutants to monitor which all pollutants so you will be also checking through your regulatory framework, what type of monitoring equipment to employ, what kind of equipment will be employed, the number and location of sampling sites this duration of the survey, the time resolution of sampling and so on. So that all needs to be decided beforehand.

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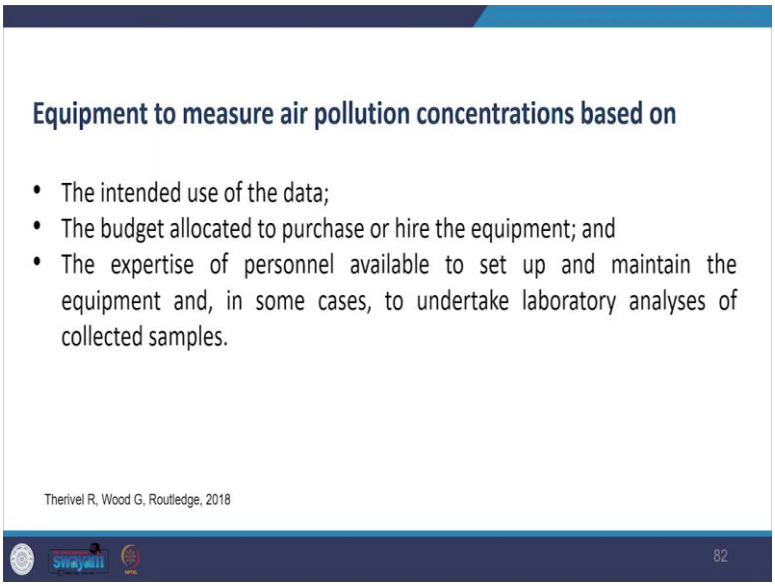

You may select the equipment to measure air pollution concentration based on the intended use of the data. So how are you going to use it? How are you going to analyze it? You also need to look at the budget allocation for how much money you have and whether you need to hire equipment or you can purchase the equipment and so on they expertise a personal level.

So, do you have people who can take care of the collection and processing of this data information that you gather so, that all you have to look at certain measurements can be expensive and hiring options are also available? So, you can look at those and be aware of the suitability of the equipment for the purpose and compatibility with the standard. So, once you look at the standards and once you choose the equipment you look at the output of the data and you see that, whether that goes along with what is what you are required to report as per the standards.

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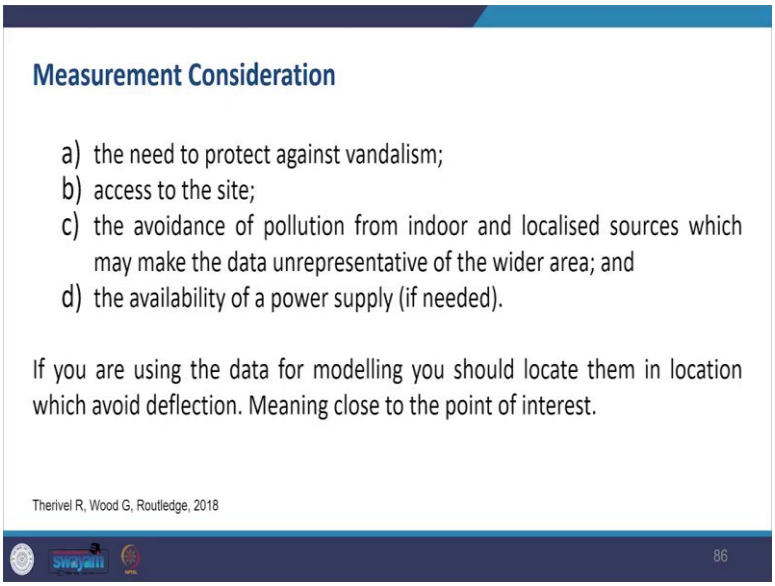

So, you might also make necessary consideration for the need to protect against vandalism. So, you need to also take care of those access to the site where they will be able to take the site or not the avoidance of pollution from indoor and localized sources, which may make the data unrepresentative of the wider area, the availability of power supply.

So, all these aspects also need to be taken care of when you implement or put certain equipment in place. If you are using the data for modeling, you should locate them in a location that avoids deflection. So, you also need to select your site for locating equipment very carefully and it should be mostly placed very close to the point of interest where you want the data to be collected from.

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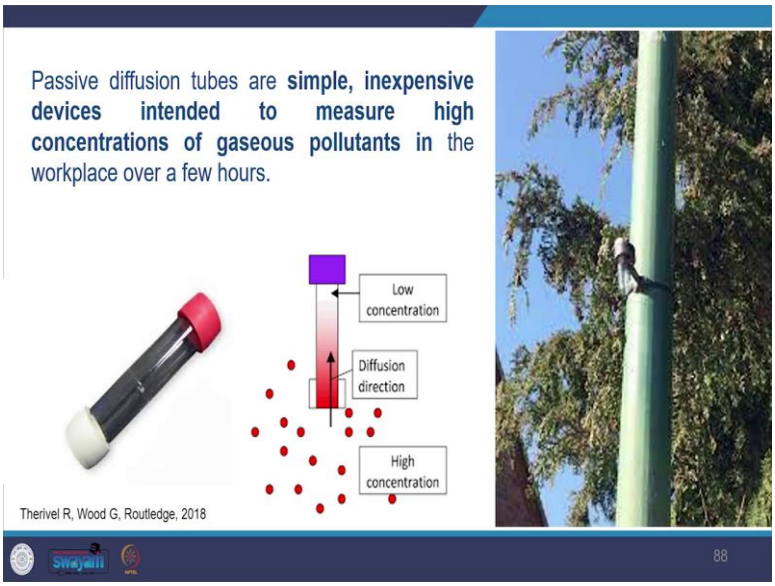

So, you can see here the passive diffusion tubes, and how they have been fixed for data collection purposes. Now, looking at the duration of baseline monitoring for the assessment purpose that will depend upon the pollutant to be tested. So, which pollutant do you want to test, and the standard that is to be assessed? So, for which you have to follow pollution concentration vary from hour to hour. So, the concentration would also vary it will also vary from day to day and month to month then as influenced by a range of external variables such as wind speed and direction sunlight temperature, precipitation, humidity, and so on.

So, you need to be careful about that, and as a result monitoring for short periods is unlikely to provide a satisfactory indication of the baseline condition. So, short-period data might not be very desirable, what is suggested is a minimum monitoring period of 3 months. So, you should monitor your data for 3 months, and 6 months is the most preferred one you would also note that CPCB also gives you guidelines on the duration for which the data has to be collected.

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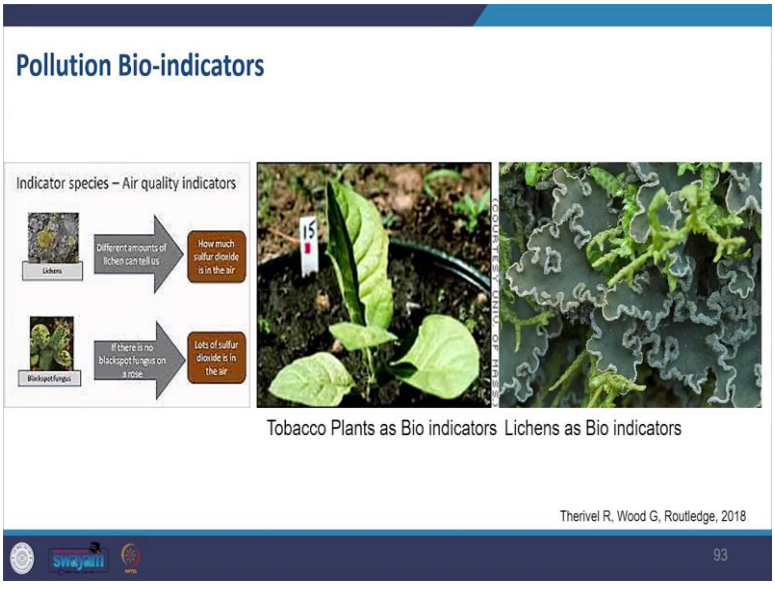

Then you also look at the pollution bioindicators like types of plants that are sensitive to pollutant levels. So, you can also this is a very good way of checking it as well. So, you can look at certain plants, they also provide supplementary information on pollution levels. Soil and vegetation analysis can also provide long-term levels of pollution such as metals and by seeing them also you can understand the pollution level if data is not available on a particular odour source.

So, now looking at odour then, if the data is not available for a particular odour source, it may be necessary to undertake sampling and chemical analysis of odour to determine an appropriate odour source term. For industrial installation, this requires the cooperation of the operator and may not always be possible. So, you also need to look at that.

So, you also have generic odour emission factors, which exist for certain types of industrial processes such as sewage treatment work. So, those are readily available which you can use. Such emission factors must be treated with caution when being used to model specifics and scenarios. So, you can also model it and you can take it as an input data and then, you can project the baseline using this information.

So, are looking at projecting the baseline information after establishing the baseline pollutant level. So, now you have collected the data, you may have to consider how these levels are expected to change. So, now you are going to predict what kind of changes would come in the future with the proposed development and without the proposed development. So, if emission sources and strengths are not expected to change, then current pollution levels may be considered to be representative of the pollution level and the new near future. So, if you see in the simulation model that the values are not changing, then you can take the current levels as well. At the same projected level.

Further, when you are taking this you may also look at the weather conditions you might build up of like you might also look at the adjoining land use you may also take other emission rates and the future pollution concentration what might be the likely changes in this standards likely changes in the technology and so on. And then also look at the authorities' guidelines. So, if you find insufficient pollution data in the study area, you may be required to compile an emission inventory.

So, you might have to take a complete study for your particular side, you may have to consider various factors that may affect emissions in future years, you may have to look at emission sources and rates of future years, you may use these emission rates as input as suitable numerical dispersion model in odour to predict future pollution concentration in the area. So, emission inventories are sometimes compiled on a national scale. So, there are already inventories that are available on the national scale and include reports of existing emissions from qualifying industries and sources, and estimates for future emissions are also available.

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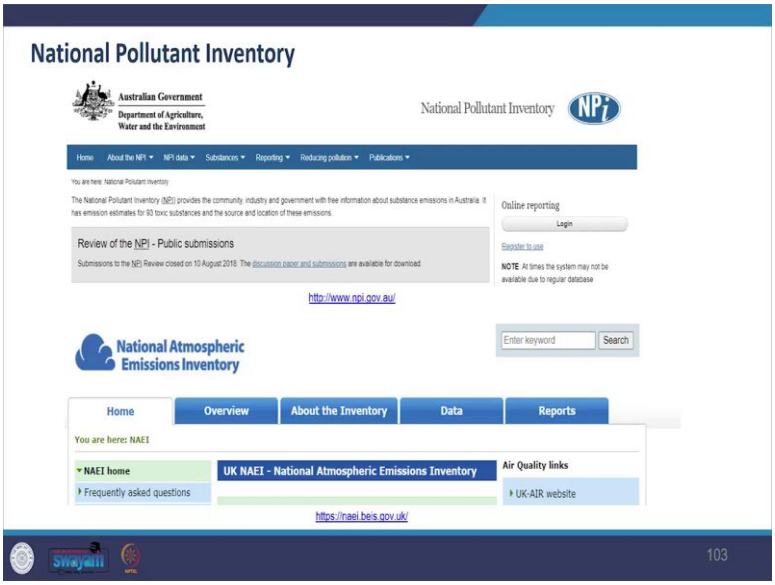

So, you can use that, for example, the National Pollutant Inventory in Australia, you can see that and then you have the UK National Atmospheric Emissions Inventory, then you can also find it in the environmental annual report. So, there are also a lot of for the industrial area the quality is already given. So, those references can also be used.

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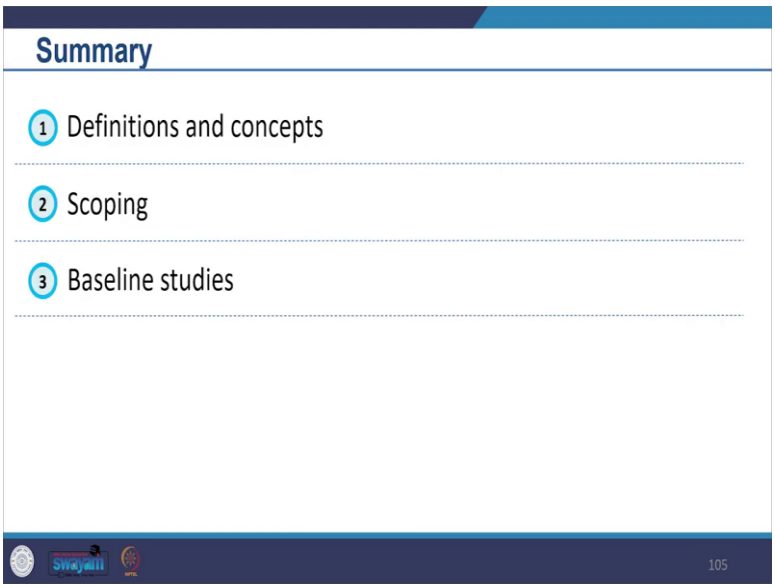

So, summarizing, what we looked at today, we looked at the definition and the concepts for air pollutants and their impact on human health, we looked at what are the different air pollutants, we looked at the odor concept, then we looked at different methods, which are used in scoping and baseline studies in what should be done as different options or context may vary.

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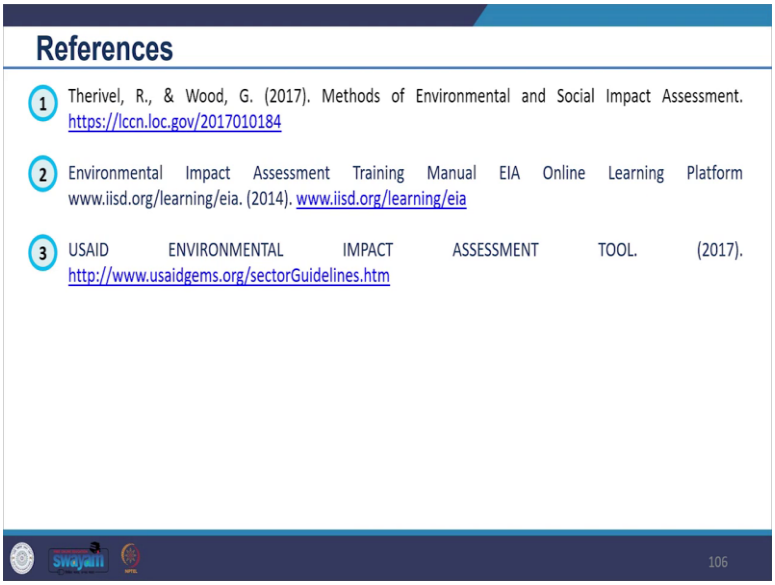

So, that is all for today. These were the references used.

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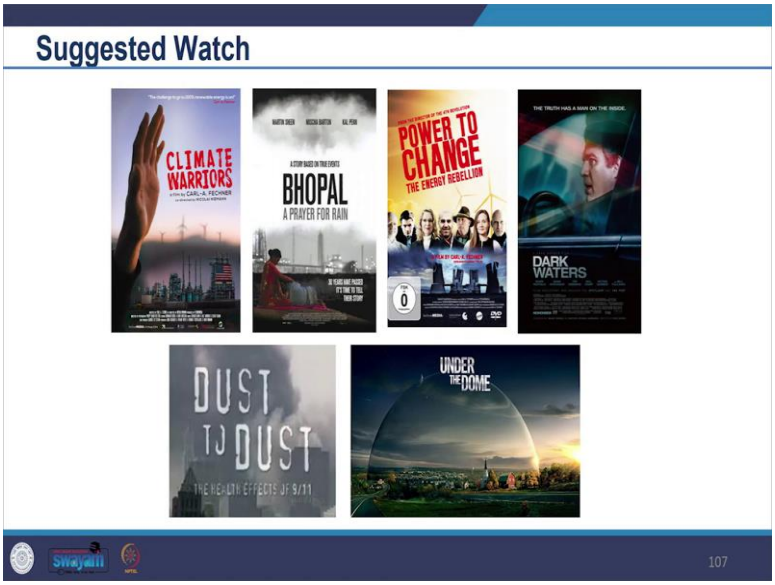

These are the suggested watch and read because our coverage is very limited, so you can read more if you are interested and explore further.

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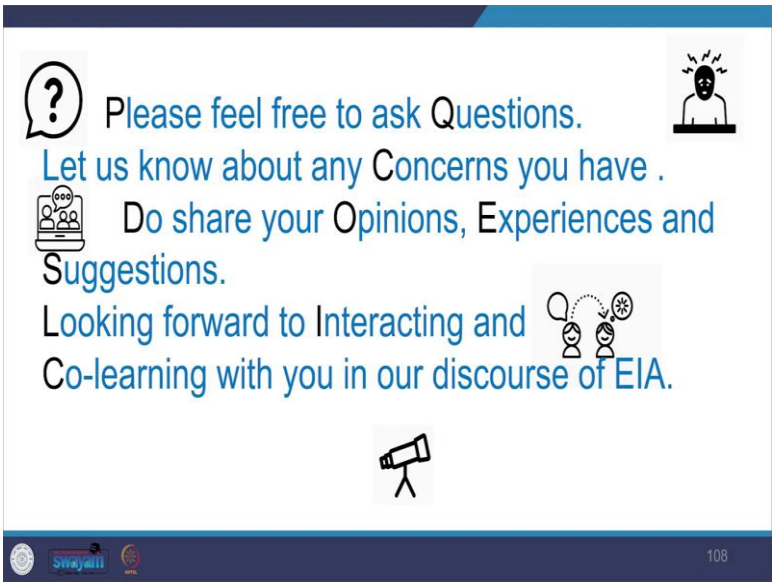

Please feel free to ask questions. Let us know about any concerns you have to share your opinions, experiences, and suggestions looking forward to interacting and Co-learning with you while exploring EIA. Thank you.