Strategies for prevention and control for environmental and occupational diseases

Objectives:
- Understand preventive strategies against environmental diseases internationally and nationally.
- Understand prevention of occupational diseases and hazards in terms of:
  - Medical measures
  - Engineering
  - Legislations

Done by:
    Team leaders: Khalid Aleisa & Ghada Alhadlaq
    Team members: Meshal Aleiaidi & Reem Alshathri

Revised by: Basel almeflh

Important | Extra | Notes

Editing file

Global Strategies:

The Millennium Development Goals (MDGs) are eight goals with measurable targets and clear deadlines for improving the lives of the world's poorest people.
Reducing the disease burden of environmental risk factors will contribute significantly to the Millennium Development Goals.
Many Millennium Development Goals (MDGs) have an environmental health component, some of which are highlighted below.

Most of the diseases are due to
1-air pollution
2-contaminated water
3-contaminated food
4-from the environment: soil

If we control and improve the environment we are encouraging people to work and if they work in a good environment they will earn money so the level of poverty will decrease and they will live a better life.
الهدف انكم تحفظون هذه القولز بس الهدف انكم to know how to control environmental risks related to these goals

Goal 1 Eradicate extreme poverty and hunger

Minimizing exposures to environmental risk factors indirectly contributes to reducing poverty, because many environmentally mediated diseases cause lost earnings. If occupational disease, injury or death eliminates the only source of income for a family, this leads to increased poverty and disease for the entire family.
Example: For developing regions, <u>the mean per capita rate of healthy life years lost to childhood malnutrition is 12-times higher than for developed regions</u>, and there is a 60-fold difference between the per capita rates for the WHO sub-regions with the highest and lowest malnutrition rates.

If we control these environmental measures then, we are at least taking the advantage of being healthy. because most of the diseases related to the environmental hazard can be controlled by controlling the environment.

Many developed countries have multiple strategies to increase water sanitation, reduce fuel use in homes and substitute it with materials that causes less air pollution.

The problem here is with the developing countries because they still have water contamination and poverty so they have higher risk for these environmental diseases. So the WHO developed many goals not mainly related to the environmental hazards but if you notice now most of the millennium goals are related to environmental risk especially in poor countries.

Goal 2 Achieve universal primary education

Environmental health intervention helps to achieve this goal in several ways. Providing clean water and toilet at school (particularly toilet for girls) will encourage primary school students to come to school. Interventions that provide water and fuel for houses will also improve student attendance, because children (often girls) will not need to spend time collecting water and/or fuel for the home.

The children are working to provide water from rivers and collecting fuels to their houses. So if we provide them with these things and making sure there is water and fuels reaching to their houses that would encourage the children to go to school and it would increase the level of education in these countries.

Goal 3 Promote gender equality and empower women

Although there were no great differences between the overall rates of environmentally mediated diseases for men and for women, women are disadvantaged in many aspects.

In developing countries, women are more likely to be involved in collecting safe water for the family, and in looking after children who may be sick from environmental risk factors such as polluted water or polluted indoor air (from using biomass fuels to cook and heat).

Goal 4 Reduce child mortality

The environmentally-linked mortality rate in children under five years of age was 180-times higher in the poorest performing region compared with that in the best performing region.
 Improving the environment could thus help to reach the MDG, to reduce by two thirds the mortality rate among children under five years old.

Goal 5 Improve maternal health

Environmental interventions can contribute to this MDG by providing a safe home environment, which is of great importance to the health of children and pregnant mothers.

An unprotected or contaminated home environment is a threat to the mother and her unborn child. Childbirth, for example, requires safe water and sanitary conditions.

Goal 6 Combat AIDS, malaria and other diseases

Every year, there are over half a million deaths from malaria worldwide and over a quarter of a million deaths from HIV/AIDS that are related to environmental and occupational causes.

Targeted environmental interventions could reduce the impact of major diseases such as these.

Environmental interventions could also reduce the number of deaths from diarrhoea and lower respiratory infections by over 3 million each year.

With the exception of HIV/AIDS, all of these diseases affect children in large number, and even HIV/AIDS can have a major indirect impact on the health of children.

Why did we specify AIDs and malaria ?
Because it's more prevalent in developing countries.

As we know malaria is transmitted from one person to another by pro - mosquitos, main source is contaminated water .
if we control the environment that means the prevalence of malaria will decrease.

Also AIDS is affected by habits and behaviors , like in poverty they need the money so they get it from any source even if they might have unpleasant sexual behavior that will increase the prevalence of AIDS also they could get AIDS from using contaminated needles. So if we reduce the prevalence of the infectious diseases such as AIDS & Malaria it will increase the level of the living conditions and it would reduce the poverty in these communities.

Goal 7 Ensure environmental sustainability

Providing sustainable sources of safe water and clean energy are key environmental interventions that contribute to this MDG.

Diarrheal diseases, caused mainly by a lack of clean water and inadequate sanitation, contribute to nearly 1.7 million deaths a year.

Environmental interventions will likely have a great impact on improving the health of slum dwellers, who are among those most affected by the combined health hazards associated with polluted water, inadequate sanitation, urban ambient air pollution, and indoor air pollution from solid fuel use.

Goal 8 Develop a global partnership for development

In summary, environmental health interventions can make a valuable and sustainable contribution towards reducing the global disease burden and improving the well-being of people everywhere.

Many interventions can be cost-effective and have benefits beyond improving people's health, benefits such as helping to alleviate poverty and reducing gender inequalities.

The most important thing about the strategies of controlling environmental hazards is reducing the environmental risk, so any source that produces air pollution, contaminated water, contaminated food or contaminating the environment itself such as : soil. By preventing the risk we are reducing the disease prevalence. for example, here in Saudi Arabia and in the developed countries we are trying to put the factories away from the cities it means we are at least trying to reduce air pollution.

All of these measures or all of these conditions are ensured to reduce the environmental related diseases.

For any disease as we said it's not only considered environmental risk sometimes it's genetics risk or sometimes it's both. So, we are not trying to eradicate these diseases we are trying to minimize or reduce these conditions. all of these things happens at the level of health policies which is the people who are leading the country not on the individual level ممكن تدخل فيها كذا وزارة مثل وزارة الزراع، وزارة المياه، وزارة الصحة او وزارة الحج

ENVIRONMENTAL IMPACT ASSESSMENT:

Environmental impact assessment (EIA) is an important procedure for ensuring that the likely effects of new development on the environment are fully understood and taken into account before the development is allowed to go ahead.

EIA means how is the environment influences the situations of people in that area or that region.

So mainly it is used in the Industrial zones if they want to build a factory so before any project they have to do the EIA
في السعودية اكثر شئ يستخدمونها في الجبيل وينبع لانها تعتبر مدن صناعية

Environmental Impact Assessment can be defined as:

The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

> It's the consequences of changing or establishing new projects just keep in your mind there's something called EIA there's nothing new or revolutionary happens unless they did the EIA.

Objectives of EIA:

- To ensure that environmental considerations are obviously addressed and incorporated into the development of the decision making process;
- To anticipate and avoid, minimize or offset the adverse significant biophysical, social and other relevant effects of development proposals;

> We are identifying possible or potential harms and if we identified them we try to minimize them.

- To protect the productivity and capacity of natural systems and the ecological processes which maintain their functions;

> For example if there are some factories that produces large amount of heat that means it will affect the environment and changes the temperature of the environment and with time there will be major changes.

- To promote development that is sustainable and optimizes resource use and management opportunities.

> If we assess this before the development of the project that means we are ensuring the sustainability of this project over long time but if the EIA wasn't done accurately and we had major issue we might end up terminating this project.

> For your information
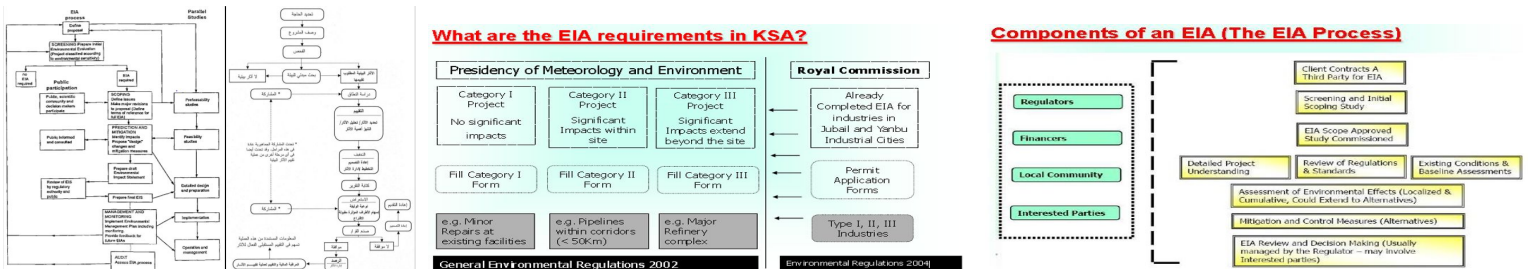
The EIA process should be applied:

1. <u>As early as possible in decision making</u> and throughout the life cycle of the proposed activity;
2. <u>To all development proposals</u> that may cause potentially significant effects
3. <u>To biophysical impacts and relevant socio-economic factors</u>, including health, culture, gender, lifestyle, age, and cumulative effects consistent with the concept and principles of sustainable development

> What are the consequences of the project on individual level and the environmental level?

4. To provide for the involvement and input of <u>communities and industries</u> affected by a proposal, as well as the interested public
5. In accordance with <u>internationally agreed measures</u> and activities

> The people who are living in this region how they would be affected from the development of this project ?
> 1- The impact on those people
>   - on their health and
>   - on their socio-economic status.
> 2- Is it going to change or not? and if there is a change is the impact huge or minimal ?

EIA report: key issues to be discussed:

- Project description
- Project justification
- Project alternatives
- Policy and legal framework
- Baseline conditions (Air, water, Soil, flora and fauna, Marine, communities, etc-as appropriate)
- Impact assessment (can include modeling)
- Mitigation measures
- Monitoring requirements

STRATEGIES FOR PREVENTION AND CONTROL FOR OCCUPATIONAL DISEASES

Every year millions of people in the European Union (EU) are injured at work or have their health seriously harmed in the workplace. Occupational accidents and diseases cause great human suffering and loss and the economic cost is also high
Prevention is the guiding principle for occupational safety and health (OSH) legislation in the EU. In order to avoid accidents from happening and occupational diseases from occurring, EU wide minimum requirements for safety and health protection at the workplace have been adopted across the Member States

Role and necessity of prevention and control strategies

- The concepts of risk assessment and risk management are fundamental to prevention and control of risks to safety and health in the workplace

> **risk management and risk assessment for any organization of working place اول شي لازم يكون فيه**
> مثلا اذا طبيب وجالس في عيادته   نتاكد هل انا موفرة كرسي مريح هل شاشة الكمبيوتر في الارتفاع المناسب
> Ensuring that everything is in the right position to avoid any risks so everything should be assessed and any occupational risk should be reported and another example is the entrance the exit or wet floors should be assessed

- The key aspects of risk assessment include making sure all relevant risks are taken into account, checking the efficiency of the safety measures adopted, documenting the outcomes of the assessment and reviewing the assessment regularly to keep it updated.
- Workers have a right to reduction in ill health and accidents given that these things can be prevented or reduced if risk assessment and risk management are done.

Principles of prevention and control

1- prevention of risks
2- protection of safety and health, assessments of risks | Minimize risk
3- elimination of risks and accidents
4- the informing, consultation, balanced participation in accordance with national laws and / or practices
5- training of workers and their representatives
6- general guidelines for the implementation of the said principles
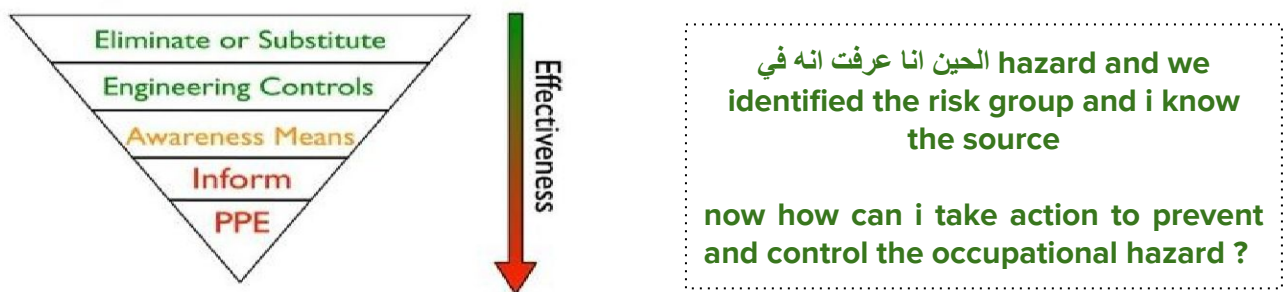7- obligations of employers, employees and other groups

Risk assessment

•Step 1: identifying hazards and those at risk
•Step 2: evaluating and prioritizing risks
•Step 3: Deciding on preventive action
•Step 4: Taking action
•Step 5: Monitoring and reviewing

Hierarchy of prevention and control measures

hazard and we الحين انا عرفت انه في identified the risk group and i know the source

now how can i take action to prevent and control the occupational hazard ?

Step 1 Elimination:

Elimination of hazards refers to <u>the total removal of the hazards</u> and hence effectively making all the identified possible accidents and ill health impossible. The term 'elimination' means that a risk is reduced to zero without shifting it elsewhere. Elimination is the ideal objective of any risk management.

Is it possible to eliminate all of the hazards ? No we can't

This is a permanent solution and should be attempted in the first instance. If the hazard is removed, all the other management controls, such as workplace monitoring and surveillance, training, safety auditing, and record keeping will no longer be required.

Step 2 Substitution:

Substitution means replacing the hazard by one that presents a lower risk. The elimination is immediately combined with a shift to another but much lower risk.
Often or usually thought of in the context of chemicals, the concept of 'replacing the dangerous by the non-dangerous or the less dangerous' can be applied much more widely
With chemicals, substitution with a safer form of the same chemical, rather than replacing the chemical may offer a viable, safer option (e.g. pellets rather than powder).

Step 3 Engineering Controls:

Engineering controls are physical means that limit the hazard. These include structural changes to the work environment or work processes, erecting a barrier to interrupt the transmission path between the worker and the hazard.

Local exhaust ventilation (LEV) to control risks from dust or fume is a common example' as is separation of the hazard from operators by methods such as enclosing or guarding dangerous items of machinery/equipment.

Priority should be given to measures which protect collectively over individual measures

> For example if it was a poisonous gas اقدر اغير مسارها بحيث ماتطلع لمكان يمرون فيه ناس or collect it in a close space, **this is engineering**

Step 4 Administrative Controls:

Also known as organizational measures administrative controls reduce or eliminate exposure to a hazard by adherence to procedures or instructions.

Documentation should emphasize all the steps to be taken and the controls to be used in carrying out the activity safely.

Particularly in respect of younger workers, social media is of growing importance as an avenue for disseminating safety messages and other information relating to occupational safety and health.

Improving the resilience of workers through measures such as workplace health promotion can also be a useful aspect of a holistic approach to prevention and control.

Step 5 Personal Protective Equipment (PPE):

PPE should be used only as a last resort, after all other control measures have been considered, or as a short term contingency during emergency / maintenance / repair or as an additional protective measure.

> We can't use it all the time only in emergency or acute situation.
> Ex: in isolation or outbreak of virus.

The success of this control is dependent on the protective equipment being chosen correctly, as well as fitted correctly, worn at all times and maintained properly.

ILO Ratifications for Saudi Arabia :

https://www.ilo.org/safework/countries/arab-states/saudi-arabia/lang-en/index.htm

> For your information

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Summary

Global STRATEGIES:

The Millennium Development Goals (MDGs) are eight goals with measurable targets and clear deadlines for improving the lives of the world's poorest people.

Millennium Development Goals (MDGs):

Goal 1 Eradicate extreme poverty and hunger

Minimizing exposures to environmental risk factors indirectly contributes to reducing poverty, because many environmentally mediated diseases cause lost earnings by losing the family breadwinner for example.

Goal 2 Achieve universal primary education

Providing clean water and toilet at school (particularly toilet for girls) will encourage primary school students to come to school.

Goal 3 Promote gender equality and empower women

In developing countries, women are more likely to in looking after children who may be sick from environmental risk factors such as polluted water or polluted indoor air.

Goal 4 Reduce child mortality

Improving the environment could help to reach the MDG, to reduce by two thirds the mortality rate among children under five years old.

Goal 5 Improve maternal health

A contaminated home environment is a threat to the mother and her unborn child.

Goal 6 Combat AIDS, malaria and other diseases

These diseases affect children and adults, a lot of them due to environmental and occupational causes.

Goal 7 Ensure environmental sustainability

Providing sustainable sources of safe water and clean energy are key environmental interventions that contribute to this MDG.

Goal 8 Develop a global partnership for development

ENVIRONMENTAL IMPACT ASSESSMENT:

The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

Objectives of EIA:
- Ensure that <u>environmental considerations</u> are <u>obviously addressed and incorporated into</u> the development of the decision making process.
- <u>To anticipate and avoid, minimize or offset</u> the adverse significant effects of development proposals.
- protect the <u>productivity and capacity of natural systems</u>
- To promote development that is sustainable.

The EIA process should be applied:
- As early as possible in decision making
- To all development proposals that may cause potentially significant effects
- To biophysical impacts and relevant socio-economic factors, including health, culture, gender, etc.
- the involvement and input of communities and industries affected by a proposal,
- In accordance with internationally agreed measures.

<u>STRATEGIES FOR PREVENTION AND CONTROL FOR OCCUPATIONAL DISEASES</u>

Risk assessment
- Step 1: identifying hazards and those at risk
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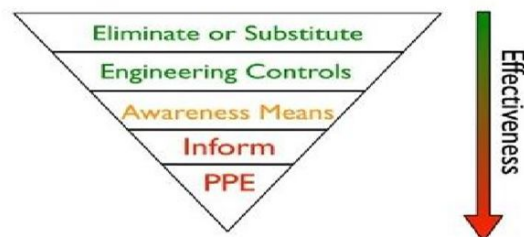
Hierarchy of prevention and control measures
Step 1 Elimination: <u>the total removal of the hazards</u>, the ideal objective of any risk management.

Step 2 Substitution: Substitution means <u>replacing the hazard</u> by one that presents a lower risk

Step 3 Engineering Controls: Engineering controls are physical means that limit the hazard, <u>Local exhaust ventilation (LEV)</u> for example.

Step 4 Administrative Controls: or organizational measures: reduce or eliminate exposure to a hazard by <u>adherence to procedures</u> or instructions.

Step 5 Personal Protective Equipment (PPE): PPE should be used only as a <u>last resort</u> The success of this control is dependent on the protective equipment being chosen correctly

Good luck!