



# Occupational Hygiene

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# Overview of Presentation

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- **Introduction**
- **Occupational Hygiene**
- **Principles of occupational hygiene**
- **Categories of Occupational Hazards**
- **Occupational Hygiene Monitoring**
- **Control Measures**
- **Composite Hygiene Index in GAIL**



# U.P. Petrochemical Complex



Gas Processing Unit of GAIL'S Petrochemical Complex at Pata, Distt. Auraiya, U.P.



## Today's Hygiene, Tomorrow's Health

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The word "hygiene" is derived from the name of **Greek goddess of health known as "Hygeia"** who was concerned with the **preservation of good health and prevention of diseases.**



## Occupational Hygiene

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Occupational Hygiene generally defined as the art and science dedicated to the **anticipation, recognition, evaluation, communication** and **control of environmental hazards arising in** the workplace that may result in injury, illness and affect the wellbeing of workers and community.



# Principles of occupational hygiene

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## Four basic principles :

- **Anticipation** – MSDSs and literatures
- **Recognition** – Use of preliminary or walk through survey
- **Evaluation** – Process of risk assessment
- **Control** – working safely with process and substances hazards to workers' health



## Categories of Occupational Hazards

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**Physical**-Noise, Heat, Radiation, Vibration

**Chemical**-Dust, gases, fumes, vapors, smokes

**Biological**-Insects, molds, fungi etc.

**Ergonomic**-Improper lifting, wrong sitting postures while working on computer, improperly designed tools, improperly designed work station

**Psychosocial** - aspects of work organization



# Physical hazards

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## (1) Noise

The permissible Exposure limit of noise is 90dB for 8hrs with exchange doubling rate of 5db. No exposure in excess of 115 dB is permitted as per OISD-STD-166.

- Psychological effects-Noise can startle, annoy and disrupt concentration, sleep or relaxation.
- Interference with communications.
- Physiological effects-Noise induced **occupational - hearing loss.**

## (2) Heat

- Long exposure to heat can cause several disorders like Heat Syncope, Heat Exhaustion, Heat cramps, Heat Stroke



## Physical hazards

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### **(3) Illumination**

- Proper lighting & position of lighting source is essential for normal work environment. Poor Lighting produces eye discomfort, and fatigue can cause headaches, nausea. Lighting of too high intensity can cause glare, which creates eyestrain.

### **(4) Radiation**

Radiation can be ionizing or non-ionizing. Radiation exposure can occur during radiography etc.

### **(5) Air borne Hazards**

- Oxygen Deficiency – below 19.5%
- Particulate contaminants.
- Gases & Vapors.



## Chemical Hazards

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- The chemical compounds in the form of gases, vapors, and particulate matter that includes dust, fumes, smoke, aerosols and mist exert their toxic effects when it comes into contact with body cell. The entry of chemicals in the body may be by inhalation, skin absorption, ingestion or combination of these routes.
- Degree of risk of any chemical depends on the magnitude and duration of exposure.
- MSDS (Material Safety Data Sheet) is a summary of important health, safety and toxicological information of the chemical or mixture of ingredients.



# Biological, ergonomic and psychological hazards

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## Biological Hazards

They can be **viruses, bacteria, fungus**, parasite or any living organism which can cause diseases in human beings.

## Ergonomic Hazards

Ergonomic hazards impact employers, workers and their families. **Poor workplace design, wrong body postures, while working in computers, lap tops**, repetitive movements, and other ergonomic hazards induces a number of cumulative trauma disorders (CTD).

## Psychological Hazards

These are caused by psychosocial factors which include work environment like organizational culture, climate, work rules, interpersonal relationship and design and content of the tasks. This factor extends to extra organizational environment (domestic, individual personality and attitude of a person).



## Occupational Hygiene Monitoring

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This monitoring can be:

- **Qualitative** meaning that smaller but focused samples are used. Observing the operation and the employee and noting the potential hazards.
- Collecting all the potential hazards through the observation the severity and probability of negative outcome is estimated, then it will be determined if further evaluation is necessary.
- **Semi-quantitative** meaning that assessments involve mathematical models to predict the exposure. This will also determine if it is necessary to have quantitative monitoring.
- **Quantitative** meaning that an assessment will be done in a laboratory where the exposure will be tested as if the employee were in the normal work shift.



# Hygiene Standards and Occupational Exposure Limits

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Hygiene standards and occupational exposure limits (OELs) are useful measures with which exposures to chemical and physical agents in the workplace environment can be compared.

**TLV-Threshold limit value** is an exposure guideline that has been established for occupational exposure to physical and chemical agents.

TLVs refer to maximum time weighted average concentration of contaminant to which workers may be exposed for an 8 hr/ work shift, 48hrs/work week without injury to health.



## Medical Surveillance

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- Any procedure undertaken to assess, review or monitor an individual's health in order to identify or detect any significant change from normality. Three reasons why health surveillance will be done at work:
  - to ensure adverse health effects related to the work are identified at an early stage; sometimes this is statutory,
  - to ensure continued medical fitness for specific tasks like diving for fire fighting,
  - to promote general health.



## Types of Control Measures

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- **Elimination/Substitution** – the most effective form of prevention control is simply to either eliminate the use of the hazardous agent, or the actual process in which it is used. This is clearly not often practicable, but quite commonly hazardous agents or processes can be substituted with relatively innocuous ones.
- **Isolation** – whenever possible processes or operations, which involve some risk(s) to health, should be completely enclosed, with the operator(s) outside the enclosure.
- **Segregation** – Hazardous processes or operations etc. can be segregated from lower risk ones by placing them, for example in a separate room thereby minimizing the number of workers at risk.
- **Engineering Controls, Ventilation** – Process capable of producing exposures to hazardous substances only, are commonly controlled by the provision of mechanical air handling methods.



## Types of Control Measures

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- **Administrative Controls** – Relate to how the interaction between personnel and the process/operation are organized. Great care is needed to ensure that procedures, once adopted, are observed.
- **Information, Instruction and Training** – Education of employees on any health hazards in the workplace and the importance of correctly using all the control measures provided, adopting recommended operating procedures and wearing personal protective equipment, if required, is needed in order to minimize the risk(s) to health.



# Proforma for composite hygiene score

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## **A. General Information:**

1. **Name of the Work Centre/Office**\_\_\_\_\_
2. **Name of the HR Executive looking after canteen services:**\_\_\_\_\_
3. **Month & year:**\_\_\_\_\_.
4. **Name of the Canteen Managing Committee members nominated for inspection of canteen services for the month:**
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
5. **Name of the canteen contractor:**\_\_\_\_\_.
6. **Staff strength:**
  - a. No. of cooks:\_\_\_\_\_
  - b. No. of helpers/servers:\_\_\_\_\_
  - c. No. of housekeeping staff:\_\_\_\_\_

## **Daily average consumption:**

- a. Average no. of breakfasts served per day:\_\_\_\_\_
- b. Average no. of tea/coffee served per day:\_\_\_\_\_
- c. Average no. of lunches served per day:\_\_\_\_\_
- d. Average no. of dinners served per day:\_\_\_\_\_
- e. Average no. of beverages (lassi, cold drink etc.) served per day:\_\_\_\_\_.
- f. Average no. of non-vegetarian meals served per day (wherever applicable):\_\_\_\_\_.



## Composite Hygiene parameters

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- 1 Quality of Raw Material
2. Storage and Shelf-life of Ingredients
3. Kitchen Utensils/ Cook-wares and Electrical Appliances – good working condition.
4. Food Preparation and Hygiene
5. Canteen Hygiene
6. Food Handler's Health and Hygiene
- 7 . Food Quality



## Hygiene parameters

Sl. NO	Aspects / Parameters	Reply	
I	<u>Quality Raw Material</u>		
1.	Whether the cereals {rice, wheat, flour with choker, pulses, etc.) being used are of proper quality?	Yes	No
2.	Whether the ingredients being used for cooking including the edible oil, ghee, spices etc. are 'Agmark' rated?	Yes	No
3.	Whether the vegetables, fruits, milk, curd, paneer, butter, non-vegetarian items, and all perishable items being used are fresh?	Yes	No
II	<u>Storage and Shelf-life of Ingredients/Products</u>		
4.	Whether the ingredients like cereals (rice, wheat, pulses etc.), edible oil & ghee, spices etc. are being stored in a clean and hygienic manner?	Yes	No
5.	Whether the vegetables, fruits, curd, milk, paneer, nonvegetarian items, and all perishable items being stored in a clean and hygienic manner?	Yes	No
6.	Whether the tea/coffee is stored properly in airtight containers at a clean and dry place.	Yes	No
7.	Whether the packaged items such as bread, butter, sauces (tomato, soya, and chilli), mineral water, soft drinks, juices, etc. being used are within their expiry date?	Yes	No



## Hygiene parameters

III	<u>Kitchen Utensils/ Cook-wares and Electrical Appliances.</u>	
8.	Whether the utensils, cook-wares, crockery, tea containers, etc. are being washed properly with cleaning material/detergents after every use and are kept clean, dry and hygienic?	Yes No
9.	Whether the conditions of the utensils, cook-wares, crockery items, tea containers etc. are inspected regularly & replaced immediately, whenever required.	Yes No
10.	Whether maintenance of all electrical appliances like airconditioners, refrigerators, deep freezer, bain marie, grinders, potato peelers, water heaters, insect repellents, exhaust fans, tea/coffee vending machines, water coolers/R.O. Plants, etc. is being carried out regularly and are in clean and safe working condition?	Yes No



## Hygiene parameters

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IV	<u>Food Preparation and Hygiene</u>		
11.	Whether First-In-First-Out (FIFO) principle is applied for consumption of raw materials/food items?	Yes	No
12.	Is the weekly menu displayed at the counter?	Yes	No
13.	Are vegetables, rice, pulses, etc. are washed and cleaned properly before cooking?	Yes	No
14.	Are the prepared food items including cut fruits and vegetables stored hygienically in clean & washed containers and kept covered?	Yes	No
15.	Are salads and cut fruits used within 2 to 3 hours of washing and cutting?	Yes	No
16.	Whether the cooking oil, ghee, etc. after using once are not reused and disposed off properly?	Yes	No



## Hygiene parameters

V	<u>Kitchen/ Canteen/ Pantry Hygiene</u>		
17.	Is the entry to cooking area restricted to canteen staff only?	Yes	No
18.	Do the cooks/servers/helpers use apron and caps while cooking and serving food?	Yes	No
19.	Are the areas like cooking counter, washing area and kitchen floor cleaned regularly with disinfectants?	Yes	No
20.	Are walls, roofs and furniture kept dust free and cleaned regularly?	Yes	No
21.	Is disposal of garbage done on daily basis?	Yes	No
22.	Is drainage system in kitchen working properly?	Yes	No
23.	Whether white washing/painting of entire canteen area and pantries is being done at least once in six months?	Yes	No
24.	Whether de-pesting of entire canteen area and pantries is being done at least once in a week?	Yes	No



## Hygiene parameters

VII		<u>Food Quality</u>	
28.	Palatability of food is tested by the representative authorized by the managing committee?	Yes	No
29.	Potable drinking water is readily available?	Yes	No
30.	is breakfast/tea/lunch/dinner available at notified timings?	Yes	No

VI		<u>Food Handler's Health and Hygiene</u>	
25.	Whether <b>annual health check-up of canteen/kitchen/pantry staff</b> is carried out?	Yes	No
26.	Canteen staff members are having their <b>nails and hairs well- trimmed and cleaned regularly?</b>	Yes	No
27.	Do the staff members <b>clean their hands</b> with liquid soap: a) before handling raw as well as cooked food items; & b) after returning from Wash/Rest Rooms	Yes Yes	No No



# Food hygiene

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**According to WHO** the five key principles of food hygiene:

- Prevent contaminating food with **pathogens**.
- Separate raw and cooked foods to prevent contaminating the cooked foods.
- Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
- Store food at the proper temperature.
- Use safe potable water and cooked materials.

With the kind of health risks that are posed to the human race today, it has become vital to stay as hygienic as possible. In fact, most of the new-world diseases like bird flu and swine flu are associated with lack of hygiene. If we practice good hygiene today, it will give good effects on the coming generations also.



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**Ensure Occupational Hygiene in your workplace  
to maintain your good health....**



***THANK YOU***