HYGIENE IN THE WORKPLACE

WORKPLACE HYGIENE

- Hygiene is the science of protecting and maintaining health through preventive practices and cleaning measures.

- It is defined as the set of practices and cleaning measures implemented to protect individuals from environments that may pose risks to health.

HYGIENE

- It is a scientific field that teaches the principles of healthy living and aims to protect and improve individual and public health.

- Health-related knowledge is applied in an integrated way to sustain a productive and healthy life.

History

- The environment and its relation to worker health was recognized as early as the fourth century BC when Hippocrates noted lead toxicity in the mining industry.

- In the first century AD, a face mask made from an animal bladder was devised by Pliny the Elder, a Roman scholar, to protect those who are working with zinc and sulfur from exposure to dust and lead fumes.

History

- In the second century AD, the Greek physician, Galen, accurately described the pathology of lead poisoning and also recognized the hazardous exposures of copper miners to acid mists.

- In 1556, Agricola, a German scholar, advanced the science of industrial hygiene even further with his book, De Re Metallica, where descriptions and preventive measures about diseases associated with mining such as silicosis, and suggestions on worker protection were written.

History

- Industrial hygiene gained further respectability in 1700 when Bernardo Ramazzini published in Italy the first comprehensive book on industrial medicine, De Morbis Artificum Diatriba (The Diseases of Workmen). Ramazzini greatly affected the future of industrial hygiene because he asserted that occupational diseases should be studied in the work environment rather than in hospital wards.

History

- Industrial hygiene received another major boost in 1743 when Ulrich Ellenborg published a pamphlet on occupational diseases and injuries among gold miners. Ellenborg also wrote about the toxicity of carbon monoxide, mercury, lead, and nitric acid.

History

- In England in the 18th century, Percival Pott, as a result of his findings on the insidious effects of soot on chimney sweepers, made the British Parliament pass the Chimney-Sweepers Act of 1788. The passage of the English Factory Acts beginning in 1833 marked the first effective legislative acts in the field of industrial safety.

History

- In the early 20th century in the U.S., Dr. Alice Hamilton observed industrial conditions first hand and startled mine owners, factory managers, and state officials with evidence that there was a correlation between 2 worker illness and exposure to toxins. She also presented definitive proposals for eliminating unhealthful working conditions.

History

- All these developments in the study of industrial hygiene led to workers' compensation laws, establishment of industrial hygiene program, and even legislations related to safeguarding worker's health such as the Occupational Safety and Health Act of 1970 (OSH Act).

Etymologically, the term hygiene means "physically and mentally healthy "

It was first used by the ancient Greeks.

HYGIENE

-Social Hygiene

-Workplace Hygiene

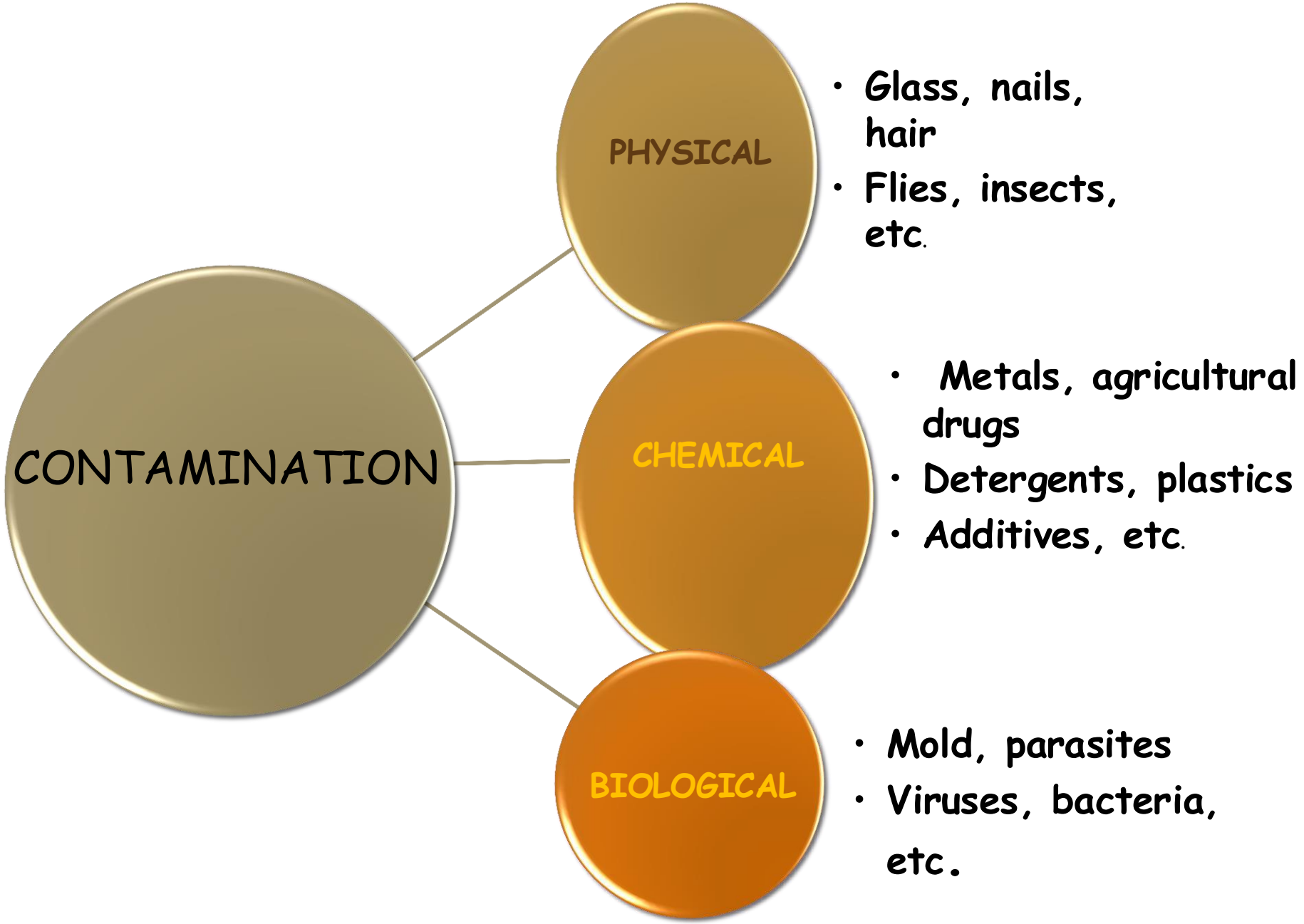
-School Hygiene

-Environmental Hygiene

-Personal Hygiene

PURPOSES OF HYGIENE PRACTICES

- To remove secretions, metabolic waste products, and microorganisms from the body
- To support physical relaxation and recovery
- To reduce muscle tension
- To prevent and eliminate unpleasant body odors


CONTAMINATION
PHYSICAL
Glass, nails, hair
Flies, insects, etc.
CHEMICAL
Metals, agricultural drugs
Detergents, plastics
Additives, etc.
BIOLOGICAL
Mold, parasites
Viruses, bacteria, etc.

DEFINITIONS

- **DISEASE:** A condition that impairs normal body or mental functions
- **INFECTIOUS DISEASE:** A disease that can be transmitted from one individual to another
- **EPIDEMIC**: The widespread occurrence of a communicable disease within a community or region.

DEFINITIONS

- **HYGIENE:** Hygiene refers to the practices implemented to eliminate all factors in the environment that may pose a risk to human health.

- **CONTAMINATION: The introduction of** dirt and/or microorganisms into a clean environment by any means.
(Chemical and Microbial)

- **CLEANING:** The removal of visible dirt and impurities from the environment.

- **DISINFECTION:** Reducing microorganisms to a level that does not pose a risk to human health.

- **MICROORGANISM:** A living organism that cannot be seen with the naked eye.

CLEANING + DISINFECTION (SANITATION)

- These are procedures carried out to reduce and eliminate factors that directly and indirectly affect human health, causing illness and maintaining continuous adverse effects.

CLEANING + DISINFECTION

Sanitation involves cleaning followed by disinfection to reduce or eliminate factors that pose risks to human health.

PATHOGEN: A pathogen is a microorganism that adversely affects health and causes disease.

- **SPORE:** A dormant state adopted by some bacteria to protect themselves and survive unfavorable environmental conditions.

- **DETERGENT:** A detergent is a cleaning agent that removes visible dirt. It does not have germicidal properties.

- **DISINFECTANT:** A **chemical substance** with the ability to kill microorganisms. It does not have dirt and grease removing properties.

- **TOXIN:** Poisonous substance produced by microorganisms after contaminating food, causing food spoilage and harm to human health.

- **INFECTION:** Infection is the invasion of the human body by pathogenic microorganisms, resulting in disease.

WHY ARE INFECTIOUS DISEASES IMPORTANT?

- They are common and widespread.
- They can cause deaths, other illnesses, or permanent disabilities.
- They cause workforce losses and financial losses.
- It is possible to protect against most infectious diseases by taking the necessary precautions and getting vaccinated.

VACCINE-PREVENTABLE DISEASES

- Tuberculosis,
- Whooping cough,
- Diphtheria,
- Tetanus,
- Measles,
- Rubella,
- Mumps,
- Hepatitis A,
- Hepatitis B,
- Polio,
- Hib infection (Meningitis),
- Influenza (Flu),
- Pneumococcal
- HPV

MICROBIOLOGY

Microbiology is a compound word derived from the Greek words **micro**, **bio,** and **logy**.

- **Micro** refers to something too small to be seen with the naked eye,
- "**bio**" means living, life
- **"logy"** means science.

The literal definition is "the science of microscopic living organisms".

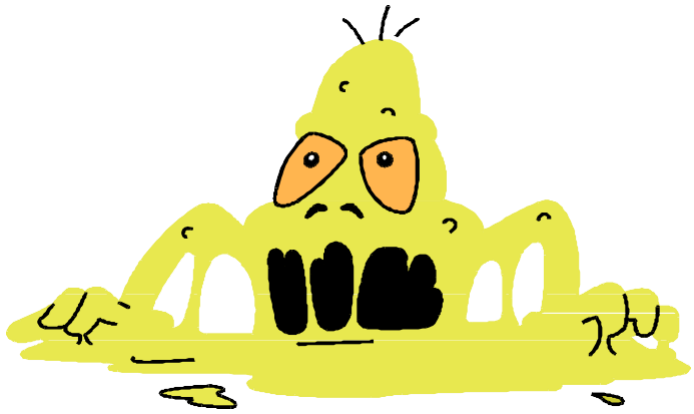
MICROORGANISMS

- In water
- In air
- In soil
- In animals
- On improperly washed vegetables and fruits
- In undercooked meat and fish
- On inadequately cleaned utensils and containers

MICROORGANISMS ARE MOST COMMONLY FOUND

- They are transmitted through dirty hands and contaminated water.

- They are transmitted to water and food through contact with fecal matter.

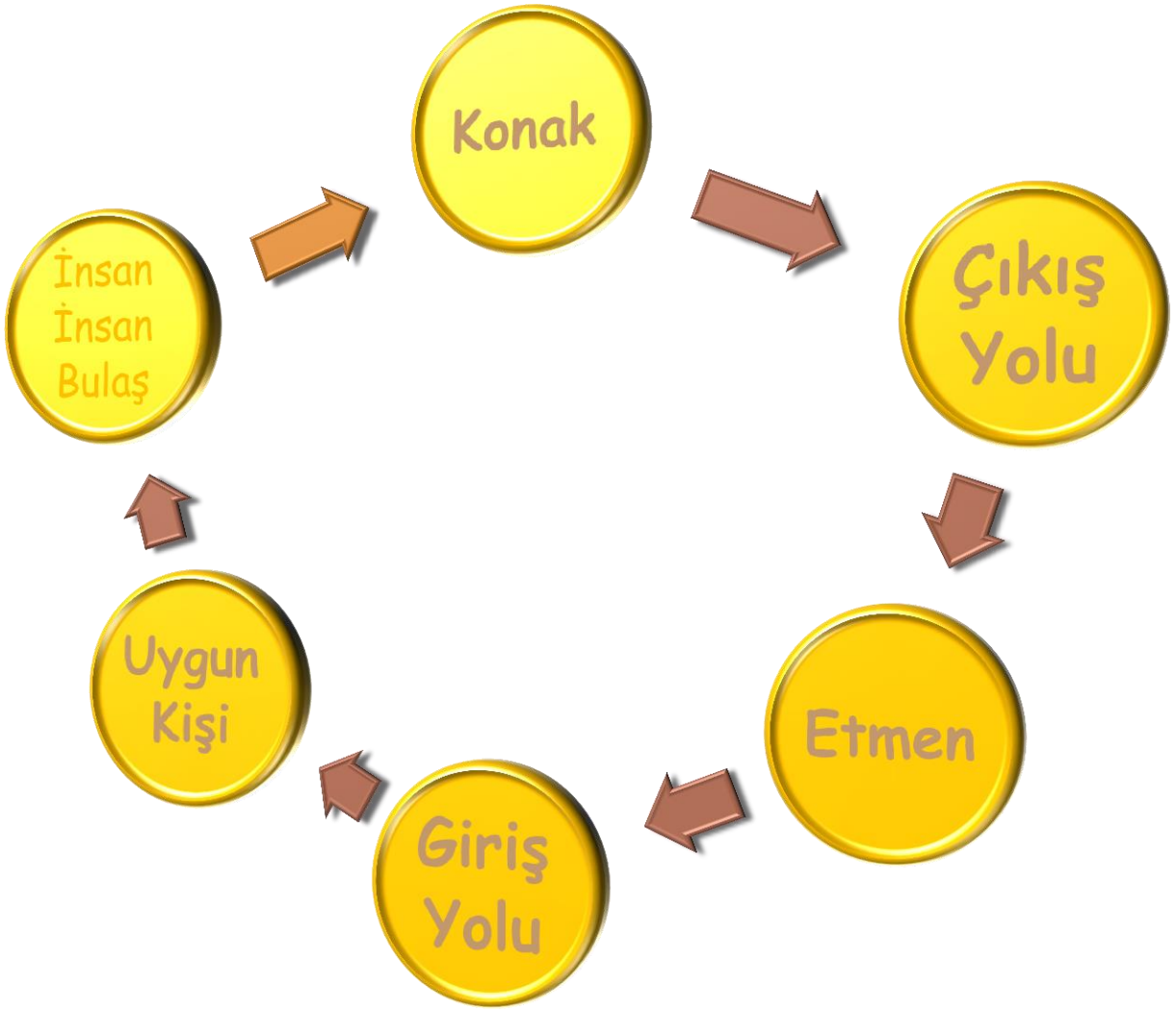


MICROORGANISM – TEMPERATURE RELATIONSHIP

Bacteria, fungi, parasites, and viruses can reproduce only within specific temperature ranges.

- Food poisoning occurs as a result of bacterial growth.
- Bacteria grow best at room and body temperature.
- Do not leave cooked meat, fish, eggs, or dairy products at warm temperatures for more than 1–2 hours.
- Boiling and pasteurization kill bacteria.
- Refrigeration does not kill bacteria but inhibits their growth.

INFECTION CHAIN



MICROORGANISMS

- Microorganisms are divided into 4 categories:

- BACTERIA
- VIRUSES
- Mold and Yeast
- PARASITES

✓ BACTERIA

- They can only be seen under a microscope and are invisible to the naked eye.
- Some bacteria form spores by hardening their cell walls in order to survive in unfavorable conditions. These spores are highly resistant to extreme temperatures including very high and very low conditions

For example:

* They can survive for more than one hour in boiling water.
* They can remain viable during freezing.

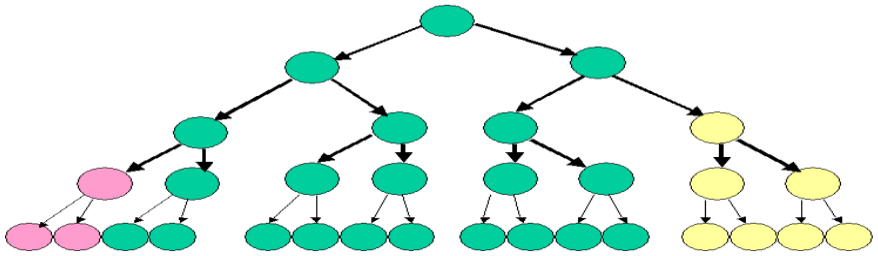
SURVIVAL AND REPRODUCTION CONDITIONS

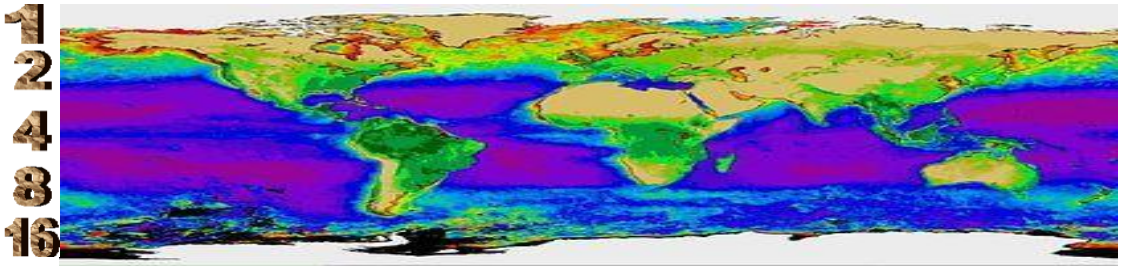
- On the 16-20 km thick living surface where living things exist on Earth
- Under suitable conditions such as appropriate temperature, moisture, and nutrient availability,
- As long as these conditions remain favorable, reproduction continues

accordingly.

- From a single bacterium

Approximately 2 million bacteria are produced within 7 hours, and 1 billion bacteria within 12 hours.





BACTERIA ARE CLASSIFIED INTO 3 GROUPS BASED ON THEIR TEMPERATURE REQUIREMENTS

1. Cold-loving (psychrophilic) bacteria
2. Mesophilic bacteria
3. Bacteria that prefer warm temperatures (thermophilic)

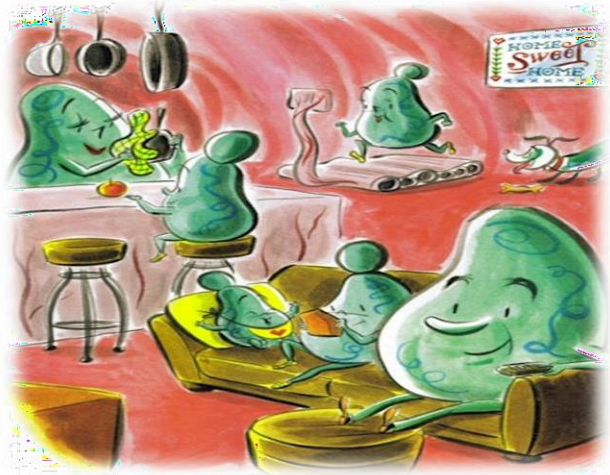
Organisms	Min	Optimum	Max
Listeria monocytogenes	0°C	28°C	45°C
Aspergillus flavus	3°C	25°C	44°C
Bacillus cereus	3–4°C	30°C	48°C
Vibrio parahaemolyticus	5°	37°C	43°C
Salmonella	5°C	37°C	46°C
Staphylococcus aureus	7°C	37°C	48°C
Escherichia coli	<10°C	30-42°C	44°C
Clostridium perfringens	30°C	42°C	45°C

They can be isolated from soil, water, dairy products stored in the refrigerator, vinegar, vegetables, and fruits.

BACTERIA

Beneficial bacteria;

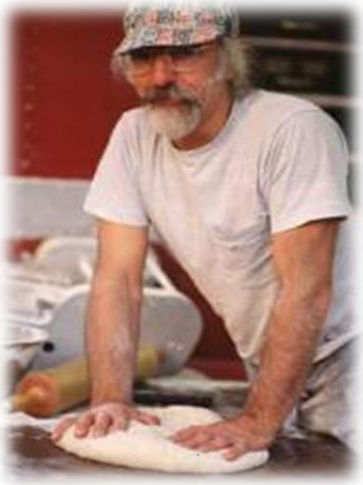
In the production of yogurt, cheese, and vinegar are beneficial bacteria



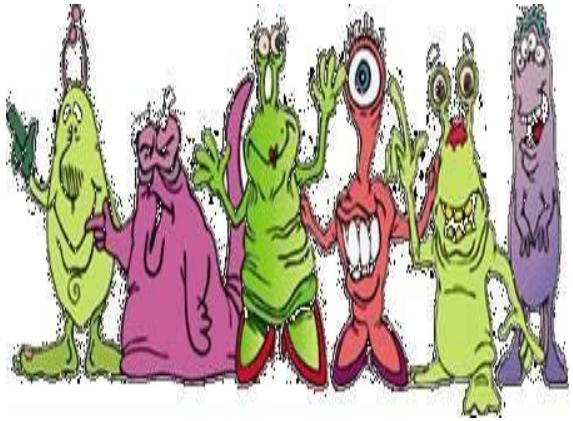
Harmful bacteria;

Bacteria that cause food spoilage and disease

ROUTES OF BACTERIAL TRANSMISSION



- Hands
- Tools and equipment
- Cutting boards kitchen countertops
- Clothing
- Coughing - sneezing
- Liquids leaking from bacteria-contaminated food



PLASTIC PACKAGING

HUMANS

DETERGENT RESIDUES

HUMAN AND ANIMAL FECES

PETS

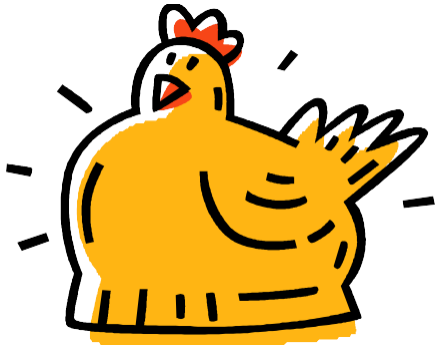
RAW OR COOKED FOOD

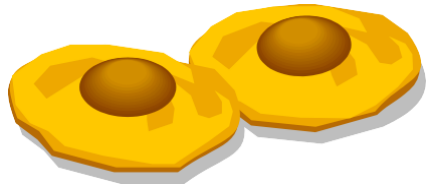
FLIES AND PESTS

DIRTY WATER

DIRTY KITCHEN UTENSILS

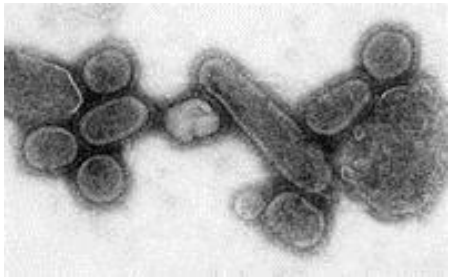
Microorganisms prefer protein-rich foods.

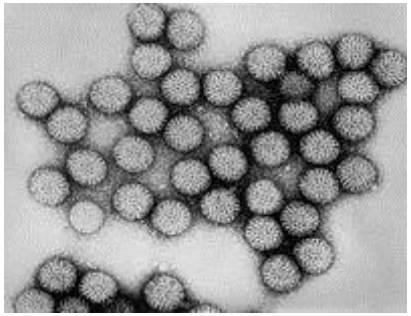




VIRUSES

- Viruses are the smallest living organisms among microorganisms.
- Viruses cannot multiply in water and food. However, they can be transmitted to living organisms through water and food.
- All viruses are pathogenic and cause various diseases in living organisms.

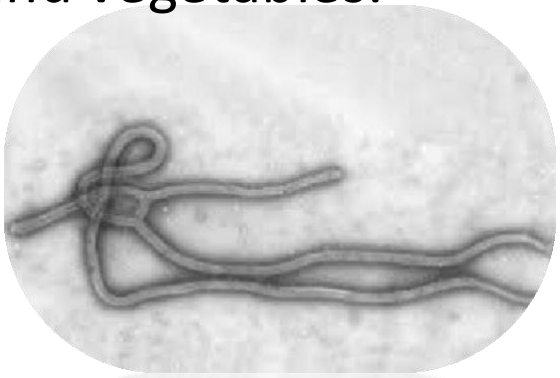




- **Stomach and intestinal disorders, polio, jaundice, influenza, etc.**
- Viruses can also be transmitted through fish and seafood harvested from polluted waters.
- Viruses can reproduce by infecting host cells.

PARASITES

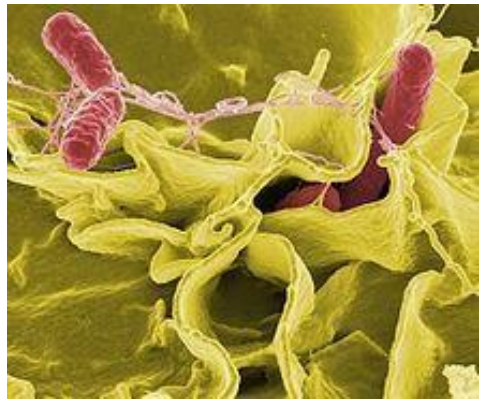
- They settle in the body of another living organism in order to survive.
- The majority cause infections in the host organism.
- They typically inhabit the intestines and other tissues.
- They are transmitted to other organisms through contaminated hands of personnel, raw or undercooked meat and fish products, contaminated water, and inadequately washed fruits and vegetables.



WATER- AND FOODBORNE DISEASES

- Typhoid
- Salmonellosis (Salmonella species)
- Bacillary Dysentery (Shigella)
- Amebic Dysentery (Entamoeba histolytica)
- Cholera
- Jaundice (Hepatitis A), etc.
- Malta Fever (Brucellosis)

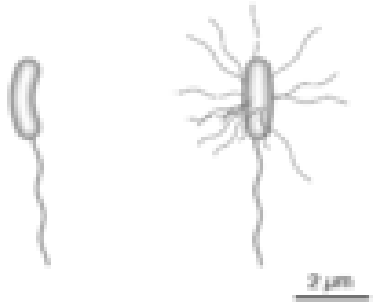
TYPHOID



- It occurs only in humans
- Carriers should not be employed in the food industry.
- Chronic carriage: shedding of *S. Typhi* in urine/feces for >1 year (1–5%).
- The disease is transmitted through the oral route by consuming water and food contaminated by carriers and patients
- Symptoms: Persistent fever, relative bradycardia, headache, abdominal pain, rose spots

CHOLERA

- It is transmitted to humans through the digestive tract via contaminated water and food.
- It is a small intestinal infection characterized by severe diarrhea.
- It may lead to high mortality rates due to excessive fluid loss.
- Seafood such as mussels and oysters, as well as drinking and domestic water, play a role in the spread of the disease.



MALARIA

- It is the most important parasitic infectious disease.
- It is transmitted by mosquitoes (Anopheles species).
- It is commonly observed in areas adjacent to swamps and wetlands.
- Its spread is closely related to water sources.
- It frequently occurs in Southeastern Anatolia.
- It is transmitted through blood and multiplies in the liver.

CLINICAL RESULTS

- The clinical picture usually develops after exposure to the causative agent.
- Fever episodes are observed (typical);

-Cold Phase: chills and shivering (30 min-1 hour)

-Hot Phase: Fever (1-4 hours)

- Sweating Phase: Sweating (1-2 hours)

HEPATITIS A

- It is transmitted through the fecal-oral route.
- Transmission occurs primarily through water contaminated with human feces.
- It commonly affects children in developing countries.
- The virus can survive in freshwater and seawater for 3–10 months.
- It can also be transmitted through shellfish.
- It does not cause chronic infection.

HEPATITIS B

- Transmitted occurs most commonly through blood.
- The incubation period ranges from 4-12 weeks.
- Acute infection lasts approximately 2-12 weeks.
- Recovery occurs in 90% of cases, while chronic infection develops in approximately 10%.
- Prevention: Vaccination

FOR A HEALTHY BODY

- Get enough sleep on a regular basis.
- Avoid excessive stress.
- Maintain a healthy and stable body weight.
- Do not take medication indiscriminately.
- Practice deep breathing.
- Reduce salt intake.
- Drink at least 1.5 liters of water per day.
- Choose protein-rich foods.
- Consume plenty of fruits and green vegetables.

FACTORS AFFECTING PERSONAL HYGIENE

- Age,
- Socio-cultural and economic status,
- Level of knowledge,
- Individual preferences,
- Health status,
- Body image

HOW IS PERSONNEL HYGIENE ENSURED?

- Nails should be kept short and nail beds must be clean.
- Food handling personnel should not wear nail polish or artifical nails.
- Hair must be fully covered with a cap or bonnet to prevent contamination of food.
- During work, hands should not come into contact with non-food, items such as the face, hair, clothing, and money.
- If contact with such items occurs, hands must be washed immediately.

HOW IS PERSONNEL HYGIENE ENSURED?

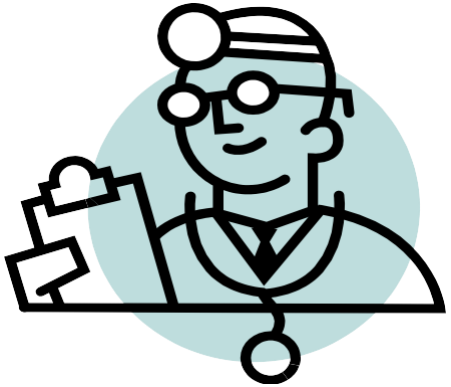
- Do not work in dirty clothes.
- Smoking is not permitted while on duty.
- Chewing gum is not allowed while on duty.
- Personnel should not use their clothing as towels.
- Personnel involved in food preparation and service should not wear jewelry (rings, bracelets, watches etc.).

HOW IS PERSONNEL HYGIENE ENSURED?

- When preparing or serving food, hands should not touch the mouth, nose or head.
- Do not sit on countertops or food preparation surfaces.
- Sneezing, coughing, or yawning can contaminate food with m/o's, therefore these actions should be performed away from food or covering the mouth and nose, followed by immediate hand washing.

HOW IS PERSONNEL HYGIENE ENSURED?

- Personnel who are ill must not work unless medically cleared by a physician.
- In certain diseases, microorganisms may continue to spread even after clinical recovery.
- In such cases, personnel should not work while they are contagious.
- According to Turkish Food Legislation, personnel with fever, skin disease, or diarrhea must immediately go to a healthcare facility for examination.



PROTECTIVE CLOTHING

- Each employee must have their own work uniform.
- Work must always be performed in clean work clothing.
- Work clothes should not be worn in dirty areas, on countertops or similar surfaces.
- Clothing should not be used to dry hands like a towel.
- Gloves and face masks should be used in necessary areas.

HAND HYGIENE

HAND HYGIENE

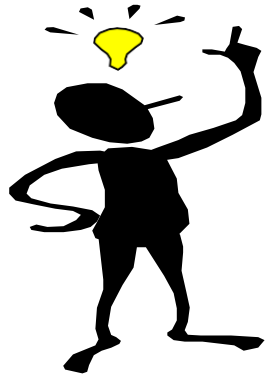
- Hand hygiene is a very important way to

  to reduce microorganisms.

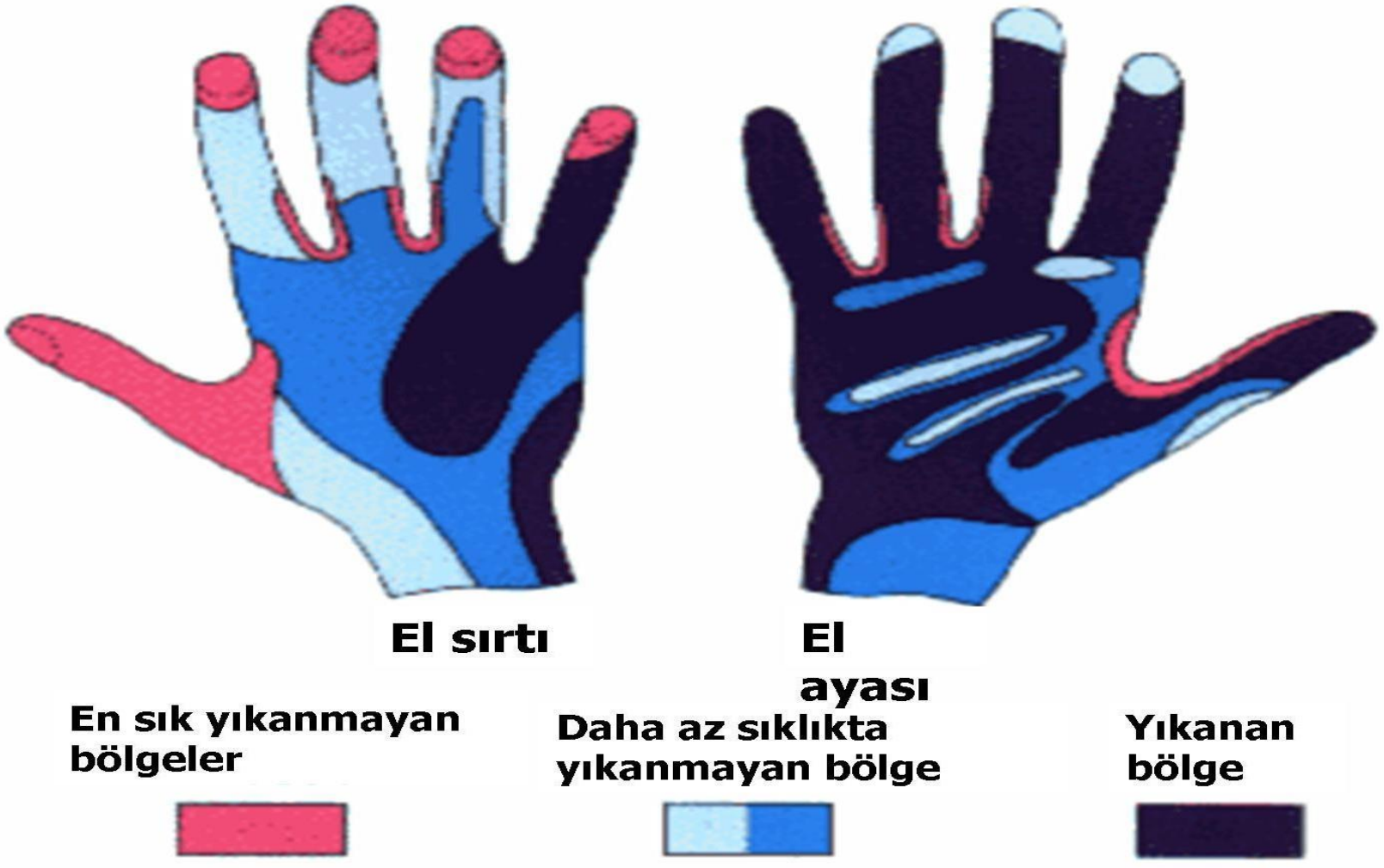
- Hand hygiene removes temporary odors and dirt from the hands.

WHEN SHOULD YOU WASH YOUR HANDS?

- Before starting work
- After using the restroom
- After using a tissue
- After smoking
- After touching your hair
- After handling raw food
- After coughing or sneezing
- After touching dirty tools, work surfaces, etc.
- After handling money



HOW SHOULD HANDS BE WASHED?



HAND WASHING

1 Wet hands with warm water (approximately 40°C),

2 5 ml of liquid soap is applied and the hands are scrubbed with a nail brush for about 30 seconds,

3 Rinse with water,

4 Apply liquid soap again,

5 Wash hands without a brush for about 10 seconds,

6 Rinse hands with water,

7 Dry hands with paper towels or automatic dryers.

Hand Antisepsis

contact between palms

1

palm of the hand with the surface of the other hand

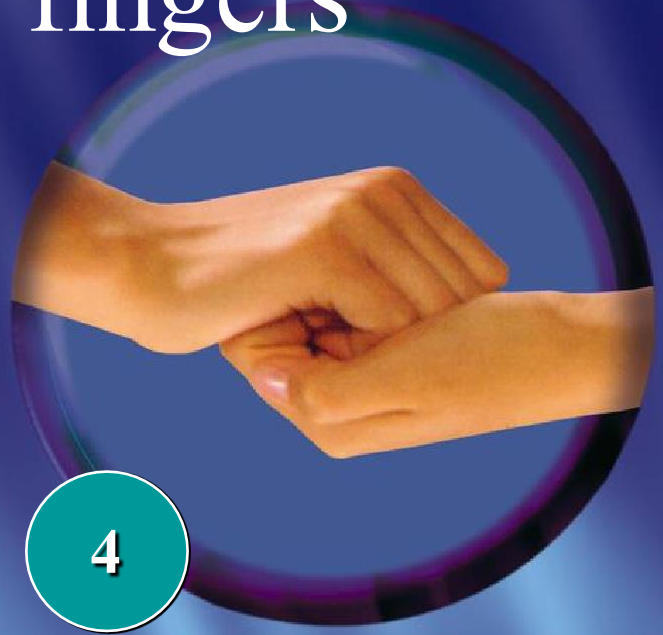
2

Fingertips

3

Hand Antisepsis

crossed fingers



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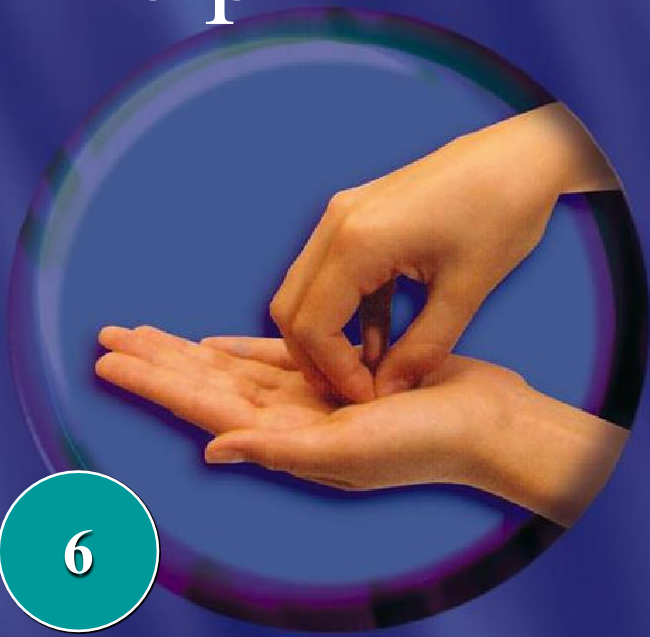
thumb

5

Fingers in the palm



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- Germs cannot grow on dry surfaces and reproduce on dry surfaces. Therefore, we should dry our hands thoroughly after washing them.

Currently, the most common and prevalent group of diseases worldwide are infectious diseases.

Teaching people the correct handwashing technique and helping them develop this habit can significantly reduce the incidence of these diseases.

Hand washing is the most effective method for controlling diseases.