Script

Paper:Title: Sanitation and Sanitizers

Introduction

The word **hygiene** comes from **Hygeia**, the Greek goddess of health ,who was the daughter of Aesculapius, the god of medicine. Since the advent of the Industrial Revolution (c.1750-1850) and the discovery of the germ theory of disease in the second half of the nineteenth century, hygiene and sanitation have been at the forefront of the struggle against illness and disease.

Hygiene education, especially in primary schools, should be a fundamental component of sanitation and water-supply programmes as well as water borne dieses. 884m people still do not enjoy an improved water supply. Consider that over 80 percent of diseases are associated with unhealthy lifestyles and self-destructive behaviors and thus are subject to healthy alterations in behavior.

This episode deals with different types **of Sanitation and sanitizers ,**special reference to food industry, hospitals, houses , water borne dieses,ect**.** The following topics are highlighted

1. **Sanitation:**
2. **Sanitizers**
3. **Dieses Due To Unhygienic Practices**
4. **Health Education**
5. **Conclusion**

1: Sanitation

Sanitation is the hygienic way of promoting health through prevention of human contact with the hazards of wastes. Sewage or waste water should be treated and disposed properly.

Hazards can be either physical, microbiological or chemical agents of disease. Wastes that can cause health problems include human and animal excreta, solid wastes, domestic wastewater including -sewage, industrial wastes and agricultural wastes. Hygienic means of prevention can be done by using simple technologies.e.g., pit latrines, dry toilets, septic tanks as well as by personal hygiene practices, e.g., hand whishing with soap .

Types of sanitation:

There are various types of sanitation services implemented by cities and counties all over the world. They not only provide convenience to citizens, but also make societies cleaner and healthier to live in. Liquid and solid wastes must be managed and controlled and these services make sure that it is done as efficiently and safely as possible.

2: Chemical Sanitizing agents

Chemical Sanitizing agents should have fallowing

Should destroy microorganisms rapidly

Have a wide range of activity.

Should be stable under all types of conditions.

Be tolerant of a broad range of environmental conditions.

Alcohol:

Alcohol-based hand sanitizers with at least 60% alcohol are one way to help you wash your hands often. When should I wash my hands with soap and water. Ethy

alcohol hand sanitizers will kill germs with in 15 seconds. To protect yourself and others against the flu and other germs, wash your hands often.

1. Before and after contact with a sick person
2. Before you prepare food or eat
3. After using the bathroom
4. After contact with body fluids, such as after changing a diaper

Iodine

Iodine by itself is a very good sanitizer; Iodine can enter a microorganism easily. It is generally accepted that the most significant reaction involves the oxidation of the sulfur-hydrogen groups in the amino acid cysteine.

Chlorine

Chlorine is by far the least expensive, powerful germicide, colorless and most widely available chemical disinfectant. It is available in the form of household bleach which is a 5.25 percent solution of sodium hypochlorite (NaOCI). For sanitizing purposes, a concentration of 100 to 200 ppm available chlorine is needed to kill most microorganisms with an exposure time of 10 minutes. When sodium hypochlorite is dissolved in cold water it reacts to form hypochlorous acid, which is a very strong oxidizing agent.

Hydrogen Peroxide

Hydrogen peroxide is considered a safe and effective sanitizer,it kills microorganisms by oxidizing them. Hydrogen peroxide is active against a wide range of microorganisms, provided it is used full strength right from the bottle. It is active at lower concentrations but exposure times should be more ,ie of 30 to 60 minutes are required.

Definitions for Cleaning Terms

Sanitizers are substances that simultaneously clean and disinfect. Disinfectants are frequently used in hospitals, dental surgeries, kitchens, and bathrooms to kill infectious organisms.Bacterial endospores are most resistant to disinfectants, but some viruses and bacteria also possess some tolerance.

Types of Cleaning Agents

Not all cleaning agents can be safely used on food-contact surfaces. Examples of those that should not be used include: glass cleaners, some metal cleaners, tub and tile cleaners. The label should indicate if the product can be used on a food-contact surface.

Secondly, the ideal cleaning agent must be selected to make cleaning easy. Cleaning agents are divided into four categories:

- **Detergents:-** All detergents contain surfactants that reduce surface tensions between the soil and the surface, so the detergent can penetrate quickly and soften the soil. Examples include Dawn and Joy dishwashing detergent and automatic dishwasher detergents.
- **Solvent cleaners:-** Often called degreasers, solvent cleaners are alkaline detergents that contain a grease-dissolving agent. These cleaners work well in areas where grease has been burned on. Examples include Fantastik.
- **Acid cleaners:-** Use on mineral deposits and other soils alkaline cleaners cannot remove, these cleaners are often used to remove scale in warewashing machines and steam tables. Examples include CLR.
- **Abrasive cleaners:-** Use these cleaners to remove heavy accumulations of soil often found in small areas. The abrasive action is provided by small mineral or metal particles, fine steel wool, copper, or nylon particles. Some abrasive cleaners also disinfect. Examples include Ajax and Comet.

SANITIZING PROCESS

Sanitizing is the process of reducing the number of microorganisms that are on a properly cleaned surface to a safe level. Reduction of the number of disease microorganisms that are of public health importance. Sanitizing is accomplished by using either heat, radiation, or chemicals.

Definitions for Sanitizing Terms

- **Antiseptic** -- an agent used against sepsis or putrefaction in connection with human beings or animals.
- **Disinfectant** -- an agent that is applied to in a minate objects; it does not necessarily kill all organisms.
- **Sanitizer** -- an agent that reduces the microbiological contamination to levels conforming to local health regulations.
- **Germicide** -- an agent that destroys microorganisms.
- **Bactericide** -- an agent that causes the death of a specific group of microorganisms.
- **Bacteriostat** -- an agent that prevents the growth of a specific group of microorganisms but does not necessarily kill them.
- **Sanitization** -- the process of reducing microbiological contamination to a level that is acceptable to local health regulations.
- **Sterilization** -- the process of destroying all microorganisms.

Sanitizing Methods

- **Heat:** There are three methods of using heat to sanitize surfaces. The first is exposing the surface to steam using one of the following time temperature schedules -- 170 degrees F for 15 minutes or 200 degrees F for 5 minutes. A second method is hot water, which is the most common method used in food establishments. The higher the temperature, the less time that is needed to kill microorganisms(171 degrees F (77 degrees C). Cleaned items must be exposed to these temperatures for at least 30 seconds. The final method of using heat is hot air that is applied at 180 degrees F for 20 minutes.

- **Radiation.** Ultraviolet radiation can be used to sanitize in the packaging areas of food processing establishments. The contact time should be at least 2 minutes and it destroys those microorganisms that are in direct contact with the rays of light.
- **Chemicals used :.** The chemicals that have been proven to be effective at the proper concentration include chlorine, iodine, and mild ammonium.

Factors that affect the efficacy of the sanitizing agent

Different factors influence the effectiveness of chemical sanitizers. The three major factors that must be considered are:

- **Concentration:** The presence of an insufficient amount of a sanitizing agent will result in an inadequate reduction of microorganisms and more concentration can be harmful or toxic to the food and environment.
- **Temperature:** Generally all most all the chemical sanitizers work best at temperatures between 55 degrees F (13 degrees C) and 120 degrees F (49 degrees C).
- **Contact time** -- For the recommended length of time the cleaned item must be in contact with the sanitizer.

Chemical Sanitizing Agents.

1:Use of *Chlorine* -- 50 ppm in water between 75-100 degrees F (7 seconds)

- Advantages -- effective on a wide variety of bacteria; highly effective; not affected by hard water salts; generally inexpensive.
- Disadvantages: Corrosive, irritating to the skin, effectiveness decreases with increasing pH of solution; deteriorates during storage and when exposed to light; loses activity in the presence of organic matter.

2:Iodine -- 12.5-25 ppm in water at least 75 degrees F (30 seconds)

- Advantages:- Active against a wide variety of non-spore forming bacteria; and activity not lost as rapidly as chlorine in the presence of organic matter. Forms

brown color that is indicative of the germicidal strength; less irritating to the skin than is chlorine.

- Disadvantages: less effective against bacterial spores than is chlorine, should not be used at temperatures greater than 120 degrees F.
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3:Quaternary Ammonium Compounds:- up to 200 ppm in water at least 75 degrees F (30 seconds)

- Advantages:- Quite active against thermoduric organisms. Nontoxic, odorless, colorless, noncorrosive, nonirritating; stable to heat and relatively stable in the presence of organic matter; active over a wide pH range.

Meat Plant Sanitation:

Efficient and skillful meat and poultry plant cleaning and sanitation are often neglected because it requires additional work. Failures in meat-plant hygiene and sanitation can cause a industry /company financial losses, they can also result in products containing pathogens and causes food borne illnesses.

The application of proper sanitation techniques is important in maintaining food safety. Every establishment must start with food safety plan that may be implemented into a documented food safety program. Essential elements of a food safety program must contain; current good manufacturing practices, sanitation standard operating procedures and a Hazard Analysis Critical Control Point (HACCP) Program.

All portions of the operation must be thoroughly cleaned ie the removal of all organic material like dirt, manure, meat scraps, etc,then sanitized. In the meat industry there are mainly four type of sanitizers used; Hot water, Chlorine, Iodophors and Quaternary Ammonia (Quat)

Operational Sanitation

Carcass dressing will be performed under sanitary conditions

- Employees will clean hands, arms, aprons, boots and protective head gear as often as necessary during slaughter and carcass dressing.
- Employees will clean and sanitize with hot water, knives, steels, node hooks, hand saws and other equipment as often as necessary during slaughter and carcass dressing to prevent contamination of the carcass.

3: Diseases Associated with Lack of Sanitation:

Lack of sanitation is a critical point in the contamination of drinking-water by microbes. As already seen, faecal pollution of drinking-water can lead to a number of diseases, including: cholera, typhoid fever, paratyphoid fever, salmonellosis, shigellosis, hepatitis. Water-related disease may be: water-borne, water-washed, water-based and water-related-vector-borne.

Waterborne diseases: Directly acquired from contaminated drinking water. Due to , poor wastewater treatment, lack of adequate sanitation facilities and unhygienic behavior.

Water-washed: Indirectly acquired diseases due to lack of hygiene. Water-washed diseases, which produce skin and eye infections, are caused by a lack of soap and insufficient water for washing hands and clothes and for personal hygiene. Trachoma, for example, is an infectious disease that can lead to blindness. Children are often a reservoir for the bacteria that cause trachoma.

3:Water-based diseases: Caused by aquatic organisms that spend part of their life-cycle in the water and another part as parasites of animals. Water-based diseases are transmitted to aquatic hosts, such as freshwater crabs, lobsters, crayfish, shrimp, which may then be ingested by people.

4:**Diseases transmitted by water** : Diseases through contaminated water is the major problem in the world. Helminths and amoebae may also be transmitted in water and are common in poor-quality water supplies.Microbial contamination usually results from the of water with human or animal faeces. If drinking-water is contaminated with faeces, pathogens are likely to be widely and rapidly dispersed. The diseases

range from mild gastroenteritis to severe and sometimes fatal diarrhoea, dysentery, hepatitis, cholera and typhoid.

Faecal-oral diseases represent the largest health burden associated with a lack of improved sanitation, diarrhoea being the most burdensome of these and accounting for over 1.6million child deaths each year. Their major transmission routes are shown in Figure 1.

The major *soil-transmitted helminths* showing association with poor access to improved sanitation are hookworm, roundworm and whipworm, all of which are transmitted when eggs are passed in human faeces which is then left in the environment.

Beef and pork tapeworms infect humans when infected and inadequately cooked animal meat is eaten. Humans can then contribute to the continued life cycle by defecating in such a manner that the eggs in their faeces are eaten by the original animal hosts.

Water-based helminths have aquatic intermediate hosts, for example snails, and are responsible for diseases such as Diseases of liver, gastrointestinal tract and bladder caused by **schistosomes** (schistosomiasis).

Most evidence exists for the impact of sanitation on diarrheal diseases, though there is also evidence for the protective effect against hookworm, roundworm and whipworm, and a growing body of evidence for prevention of trachoma transmission via reductions in fly populations.

1. **Poor personal hygiene and infected personnel:**
   Personal cleanliness and hand washing is very pertinent when handling food. Ensure that the facility has a properly working hand sink with soap and single-use paper towels. Other hand washing methods may be approved by the health authority for temporary operations.

Wash your hands frequently, especially before you begin work and after performing any of these activities: using the toilet, handling raw food, coughing or sneezing, smoking, handling soiled items and disposing garbage.

2. **Serving raw foods and ingredients:** Ensure that raw products are fresh and wholesome. Otherwise should not be served because they may cause food-borne disease. It is always safer to use pasteurized products.
3. **Food Protection:** Be careful to protect food products at all times from contamination by keeping them covered or packaged above ground or off the floor. Eliminate unnecessary food handling and protect all foods from physical contamination such as sneezing, coughing, touching dirty surfaces or containers.
4. **Water Supply:** When food is prepared on the site, a system capable of producing enough hot water for frequent hand washing and cleaning and sanitizing utensils and equipment shall be provided on premises. Only potable water should be used either from a municipal source, a regulated community well.
5. **Sewage:** All sewage, including liquid waste, should be properly disposed of by a public sewage system or by a sewage disposal system constructed and operated according to local plumbing codes.
6. **Garbage and Refuse:** Must be kept in durable, easily cleanable, insect and rodent-proof containers that do not leak and do not absorb liquids.

The discharge of untreated wastewater and excreta into the environment affects human health by several routes: • By polluting drinking water; • Entry into the food chain, for example via fruits, vegetables or fish and shellfish; • Bathing, recreational and other contact with contaminated waters; • By providing breeding sites for flies and insects that spread diseases;

4:Health education

Teachers can function as role models, so that can guide entire society by educating children's. School children can influence the behaviour of family members both adults and younger siblings - and thereby positively influence the community

as a whole. UNICEF, together with its partners at global and country level, is involved in many different programmes to improve sanitation and promote health and hygiene in schools.

Sanitation is the single most important medical advance since 1840" — British Medical Journal reader survey. Millions of other children are made sick are disabled by other water- and sanitation-related diseases and infections including cholera, malaria, trachoma, worm infestations and guinea worm disease. Man-made pollution of water sources with dangerous contaminants threatens millions of people.

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International Year of Sanitation, 2008,

IYS focuses on five key messages that underline both the benefits of improved sanitation and the need for action:

1 Sanitation is vital for human health. Poor sanitation and hygiene causes death and disease.

2 Sanitation generates economic benefits. Improved sanitation has positive impacts on economic growth and poverty reduction.

3 Sanitation contributes to dignity and social development. Sanitation enhances dignity, privacy and safety, especially for women and girls.

5: Improving sanitation is achievable. Working together, households, communities, governments, support agencies, civil society and the private sector have the resources, technologies and know-how to achieve the sanitation target.

Educating school Children on basic hygiene and sanitation is very important because; most children are eager to learn; children have important roles in household chores related to hygiene, and can therefore instill change within their families and communities. These children are also future parents who will pass on the good hygiene practices that they learn in school to their children.

- Campaign integrated- covering sanitation, hygiene, health, environment and women empowerment
- Campaign mode / advocacy programmers
- Media advertisement/ articles regularly
- Hoardings in offices/ markets/bus stands
- Training to Key Resource Persons in rural area
- Separate teaching hand book for schools developed
- Five minutes discussion in each school after prayer
- School level competitions

5: Conclusion:

Worldwide 3.4 million people die due to water related diseases. In India about one million die every year. Sanitation is the practice of sterilization, or making sure that microbes or germs do not get into contact with humans, animals, food or water, causing infectious and sometimes fatal disease. It also involves disposing of waste properly, so it does not threaten the environment. Practicing proper hand washing and surface cleaning techniques are all part of best sanitation practices. Sanitation helps the environment**.** Improved disposal of human waste protects the quality of drinking-water sources and improves community environments

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