

A Literature Review on Types of Contamination (Biological, Chemical, Medical)

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ABSTRACT

This review deals with pollution, contamination, types of pollution, causes of pollution, effect of pollution on health and environment. Also it involved essential forms of contamination like: environmental pollution, chemical pollution, radiation pollution, soil pollution, water pollution, thermal pollution, biological pollution, medical pollution that killed millions people in many countries in the world

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INTRODUCTION

The contamination is the introduction of damaging for natural environmental poisonous materials into the environment [1-3]. Pollution means the presence of some materials in the environment and the state of the natural environment being contaminated with potentially harmful substances as an outcome of human activities [4-14]. In General, the natural environments subject to contamination largely include food, water and air. Presence of essential substances [15-30] like (liquid, gas, solid) or energy like (heat, microbe and germs, radiation, chemicals) which have the potential [31-40] to cause damage to the health of humans, plants or animals.

Types of Pollution

The main forms of contamination [41-45] are abstracted below:

- A. Air Pollution:** Pollution by carbon monoxide (CO) , sulfur dioxide (SO₂) , nitrogen oxides (NO) which yield from industry vehicles and other.
- B. Soil Pollution :** occurs by wastes of chemicals that cause soil contaminants (hydrocarbons, heavy metals).
- C. Radioactive Pollution :** occurs by activities in atomic physics and nuclear power generation .
- D. Chemical Pollution :** occurs by wastes of chemical materials.
- E. Water and Food pollution :** occurs by wastes from commercial and industrial waste through spills into waters.
- F. Biological Pollution:** occurs by contamination with microbes germs.
- G. Pollution by Medical Wastes :** occurs by wastes of medical and waste of hospitals.

Bacterial Pollution:

The microbial pollution occurs via contamination of tools, hands directly with bacteria and germs. The use of indigenous microbes for bioremediation is highly advantageous due to their growth is highly influenced by pH, temperature, oxygen and appropriate level of nutrients, poor bioavailability of contaminants and presence of other toxic contents and by using materials involve microbes and bacteria, fig (1).

Air Pollution

Air contamination is a mix of gases with particles which causes high concentrations of toxicity. Its effects cause higher disease risks to rising temperatures then contamination of environment like smoke, methane CH₄, carbon dioxide CO₂ are a just few examples of this kind of contamination. The contamination of air due to poisonous gases in the atmosphere from industrial vehicles, construction activities, smoke from motors that cause many health problems, fig (2):



Fig (1): Pollution by Bacteria



Fig (2): Pollution via Smoke

Water and Food Pollution

The pollution and contamination of water via harmful chemicals and rivers waste, The major heavy metal contaminations of leachate act :(Mercury Hg, Cadmium Cd, Chrome Cr, Lead Pb) and other metals that the concentration increased in drinking water reaches one millionth, it will have some pathological changes in blood, liver, lung, hair, and other organs. Furthermore, they will also enter the soil in various ways., fig(3):

Radioactive Pollution

This type of pollution comes from nuclear waste like uranium mining., emission factors reported representative data which attempt to relate the amount of a pollutant released to the ambient air with an activity linked with the release of that pollutant. fig (4):



Fig (3): Pollution of Water and Rivers



Fig (4): Pollution by Radiation

Personal Pollution

This type of pollution occurs via the harmful effects of a bad behaviors like smoking, and drinking. The effects on health caused by air contamination may involve difficulty in breathing, wheezing and worsening of existing respiratory and cardiac conditions. These effects increased medication treatments, fig (5):

Pollution by Odor Chemical Compounds

The main causes of this pollution comes from chemical compounds and waste [41-

50] of Lab like N-nitroso dimethylamine, phenols, aromatic amino compounds like 4, 4'-amino phenyl aniline and other , fig(6) :

Chemical Pollution:

This contamination due to presence of (Carbon dioxide , Carbon mono oxide , and other) that decrease in the pH of soil or occurs from chemicals , detergents , cleaning materials, Fig (7) :



Fig (5): Pollution by Smoking



Fig (6): Pollution via Odor of Chemicals



Fig (7): Pollution via Chemicals

Pollution by Organic Materials:

Organic material like hydrocarbons, rubber, plastic, paper and wood that can cause this type of pollution, most children aged less than age (5 years) that live in developing states are vulnerable population in terms of deaths attributable to air contamination., fig (8):



Fig (8): Pollution via Organic compounds

Effect on Humen Health :

This type of contamination causes bad effects [51-55] humans health that can kill many organisms and many diseases by waste of hospitals, Medicare recipients

who are exposed to more air contamination have higher mortality rates, fig (9):

Biological Pollution:

Most of workers in biological studies fields have many health diseases due to their work, This type of pollution causes half a million deaths per year in some countries, fig (10):

Medical waste is any kind of waste including infectious materials. According to the heath reports .The contamination was also found to be linked with increased incidence and mortality through coronary stroke , most of disease[56-59] in presence time due to hospitals waste .,fig(11):

Medical Pollution:

And pollution via medical material of injection, fig (12)



Fig (9): Pollution via Waste of Hospitals



Fig (10): Pollution via Microbes in Environment



Fig (11): Pollution by Materials of Hospital



Fig (12): Pollution by Injection

CONCLUSIONS:

The environmental pollution remain a main source of health problems in the world due to a wide uses of chemical materials, chemical detergents, and because presence of bacteria , fungi, diseases , waste of hospitals , waste of chemical in rivers and waste of water.

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