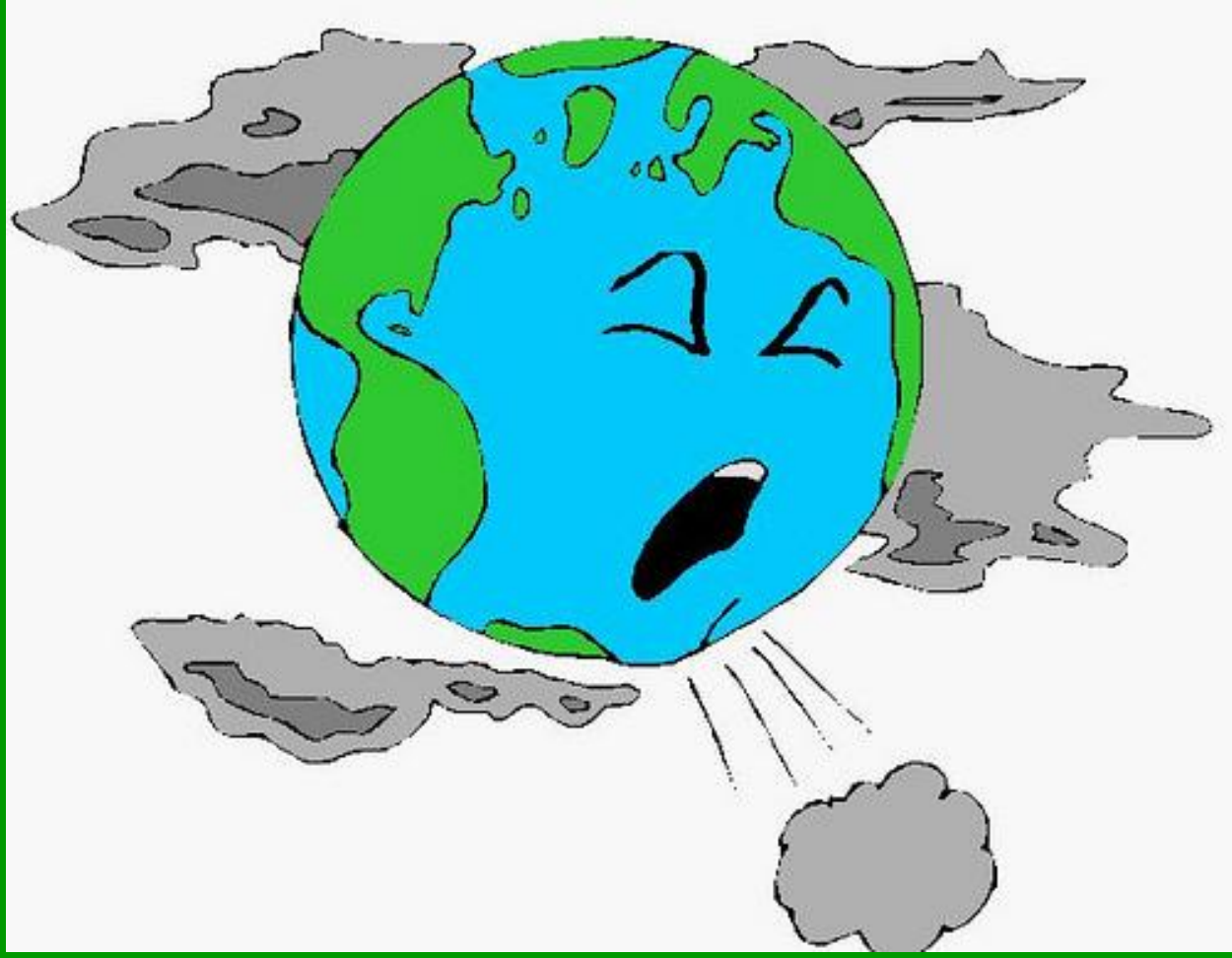
Human ecology

Lecturer: ass. Nedoshytko Kh.Yu.

As the human population increases in size, the space allotted to natural ecosystems is reduced in size. Natural ecosystems are then no longer able to process and rid the biosphere of wastes, which accumulate and are called pollutants.



Pollutants are substances added to the environment, particularly by human activities, that lead to undesirable effects for all living things. Human beings add pollutants to all parts of the biosphere - land, water and air.

The high level of industry agriculture conc human economic acti terrible situation that human life in many countries is ecologically dangerous. The pollution of environment (water pollution, air pollution, land pollution) has the bad influence to human health. That is why nowadays a new branch of ecological science begins to develop. It is **human ecology**.

Human ecology is an academic discipline that deals with the association between humans and their natural environment.

Human ecology is about investigating how individuals and individual societies interrelate with nature and with their environment. It integrates knowledge from all academic disciplines and from personal experience to investigate, and ultimately improve, the relationships between human beings and our social and natural communities.

Human ecology views human communities and human populations as part of the ecosystem of earth. It is the special ecology of the species *Homo sapiens*.

In the v

sociological field in the 1920's, although geographers were using the term much earlier.

Nowadays the main human ecology development line is directed to the decision of the management problems by the environment, ways making of the rational nature usage, peoples life conditions optimization in diverse anthropological systems.

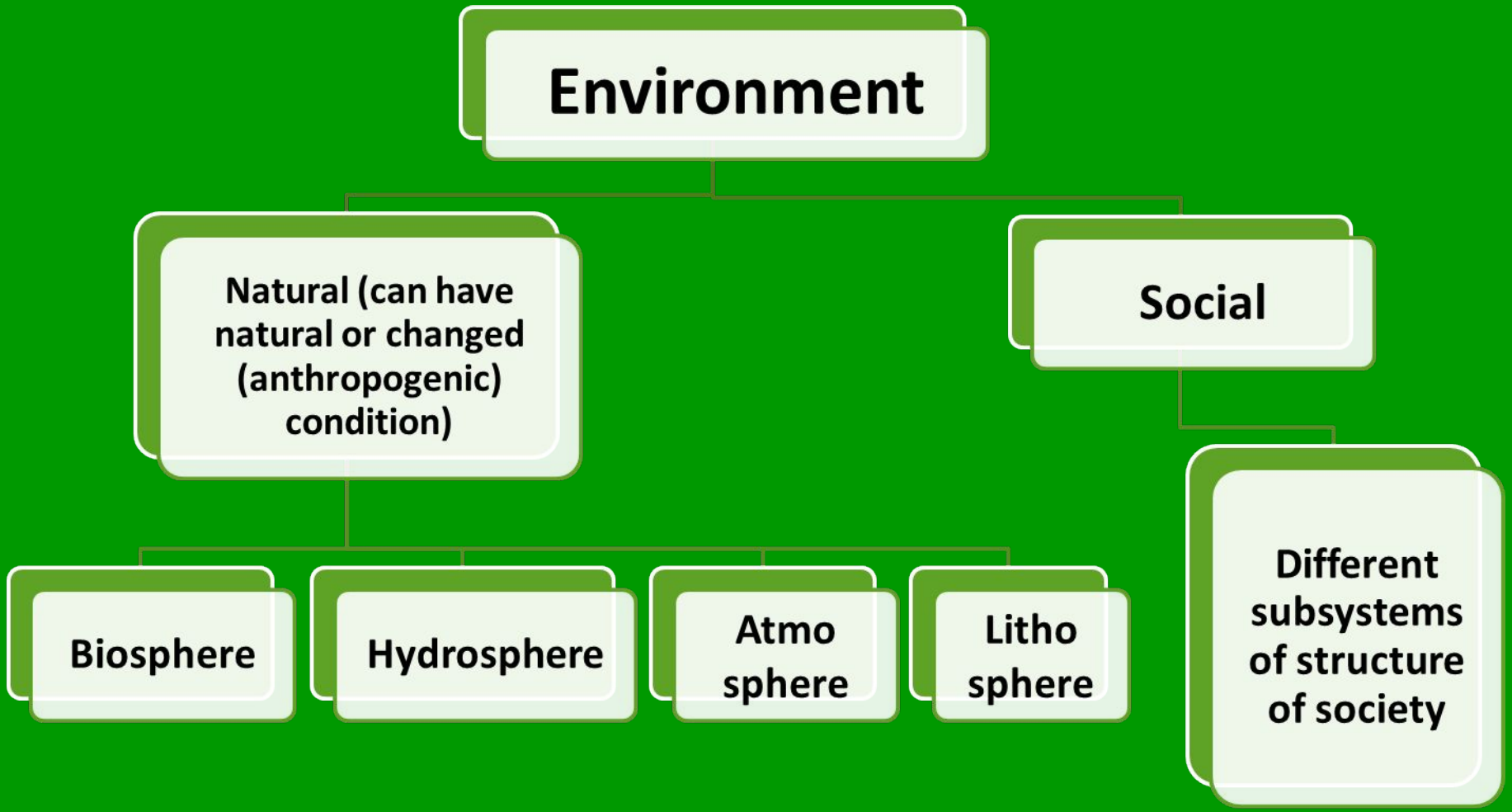
Human ecology explores not only the influence of humans on their environment but also the influence of the environment on human behaviour, and their adaptive strategies as they come to understand those influences better. It is a way of thinking about the world, and a context in which we should define our questions and ways to answer those questions.

The object of investigation is the system:

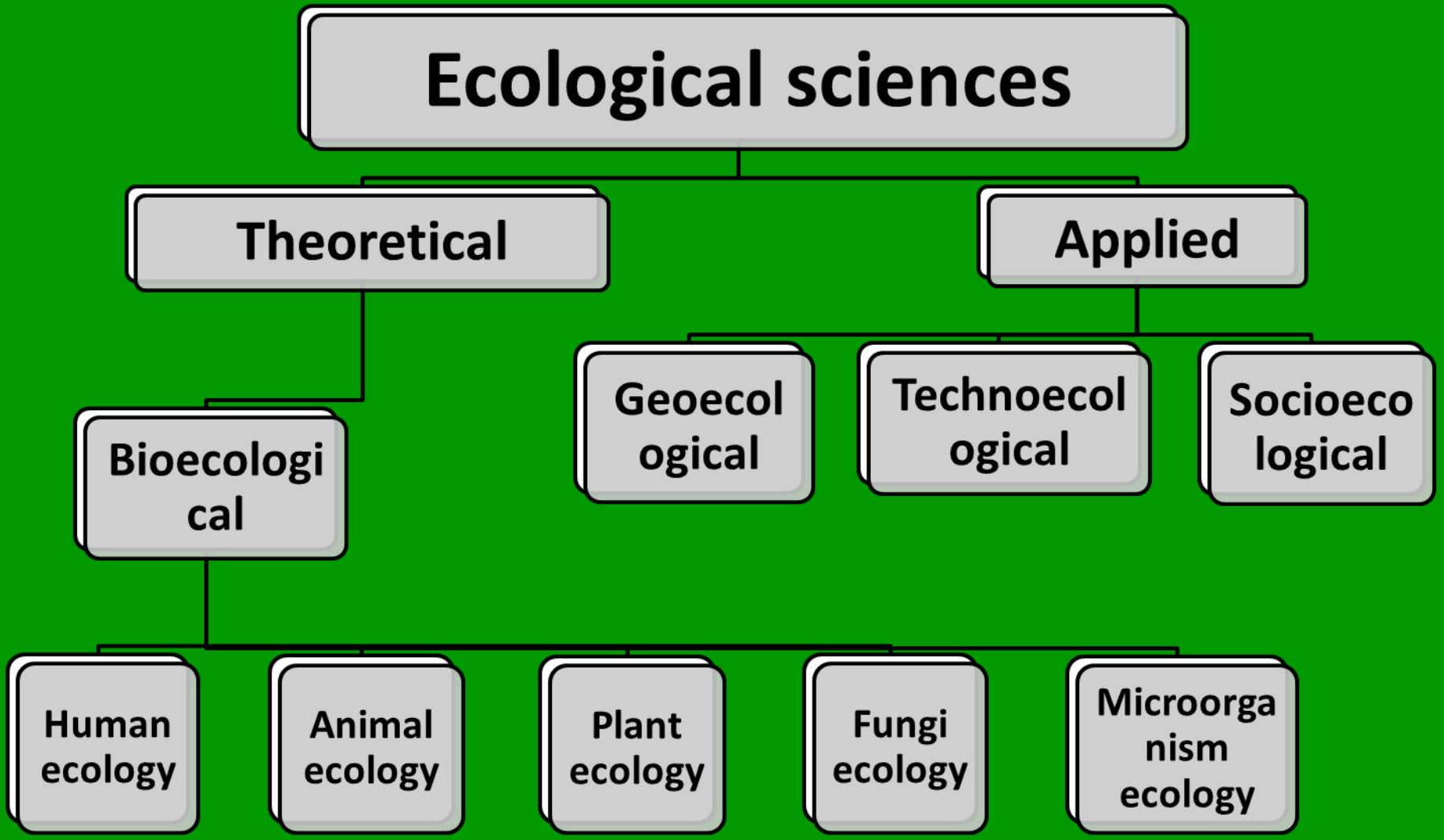
Environment

Human

THE STRUCTURE OF ENVIRONMENT



THE PLACE OF HUMAN ECOLOGY IN THE SYSTEM OF ECOLOGICAL SCIENCES



The main tasks of human ecology:

- the investigation of human health condition;
- the research of dynamics of human health condition in the process of historical and social-economical development;
- the forecast of the health condition of the future generations;
- the investigation of the processes of human health protection;
- the analysis of global and regional problems of human ecology;
- the research of influence of environmental factors to human health;
- the composition of medical-geographical maps that show the territorial differentiation of human diseases;
- the addition of medical-geographical maps and environmental pollution maps and the determination of correlative dependence between human diseases and environmental pollution;
- the determination of value of boundary technogenic load limit to human organism.

Human ecology uses many methods of investigation:

- mathematical;
- statistical;
- biochemical;
- physical;
- bacteriological;
- clinical;
- physiological etc.

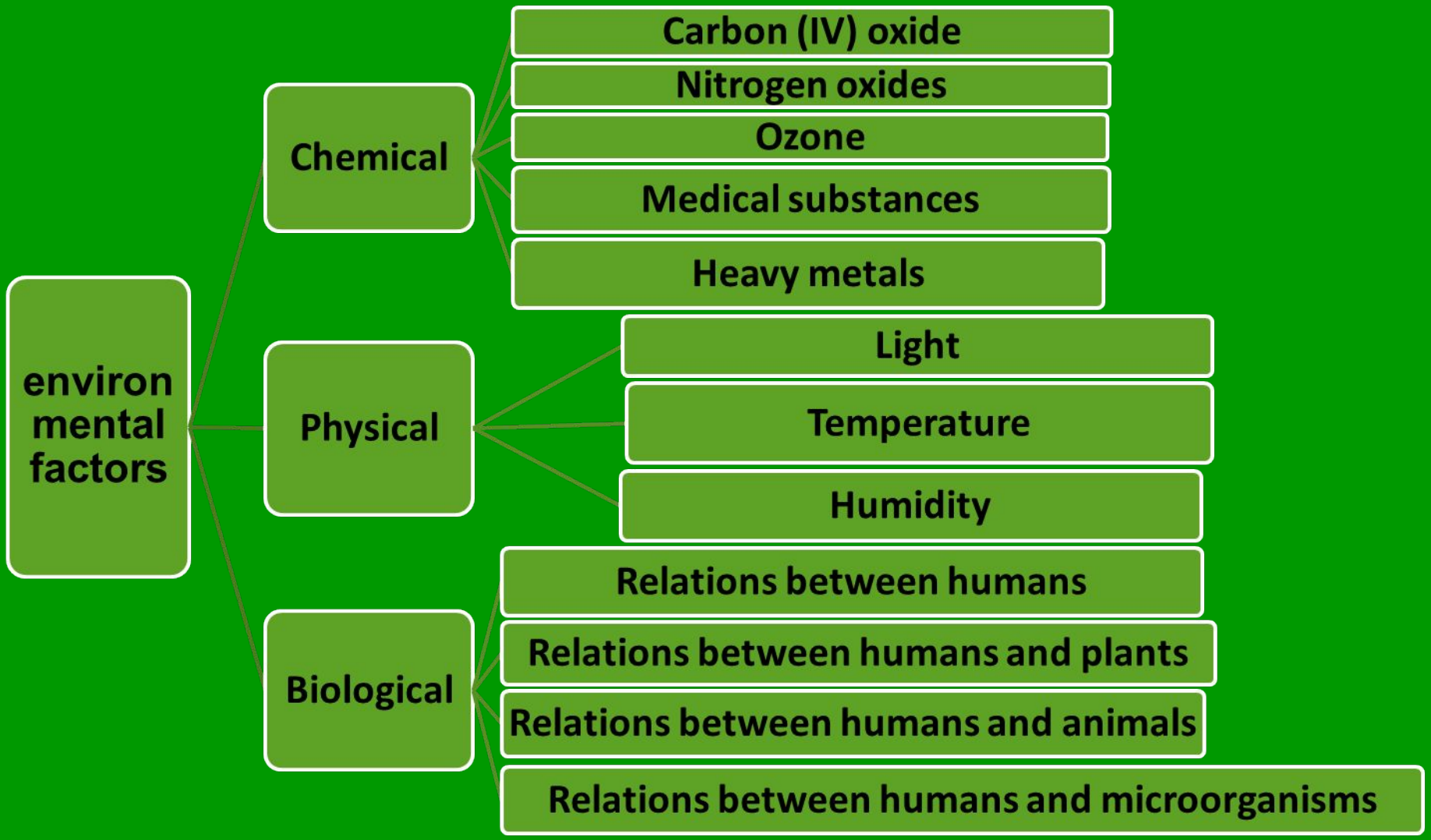
Human ecology is connected with many sciences:

- immunology;
- hygiene of environment;
- ecotoxicology;
- medical geography etc.

The main terms of human ecology:

- **Hygiene standard** – is the definite range of values of the environmental factor which is optimal or is not dangerous for human health, activity and life;
- **Maximum permissible concentration** – is maximum amount of toxic substance in unit of volume or mass of water, air or soil which does not have any influence to human health;
- **Maximum permissible level** – is periodical or permanent influence of the environmental factor to human organism which can not cause any diseases or changes in human health condition;
- **Maximum permissible dose** – is the amount of toxic substance which penetrating in human organism does not hurt it.

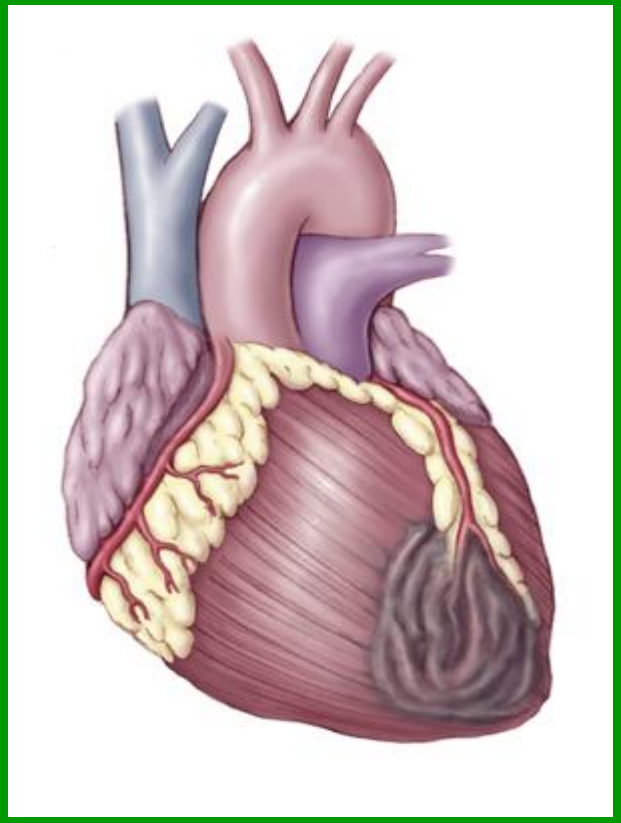
In real conditions humans feel the influence of different environmental factors.



The influence of physical factors to human organism

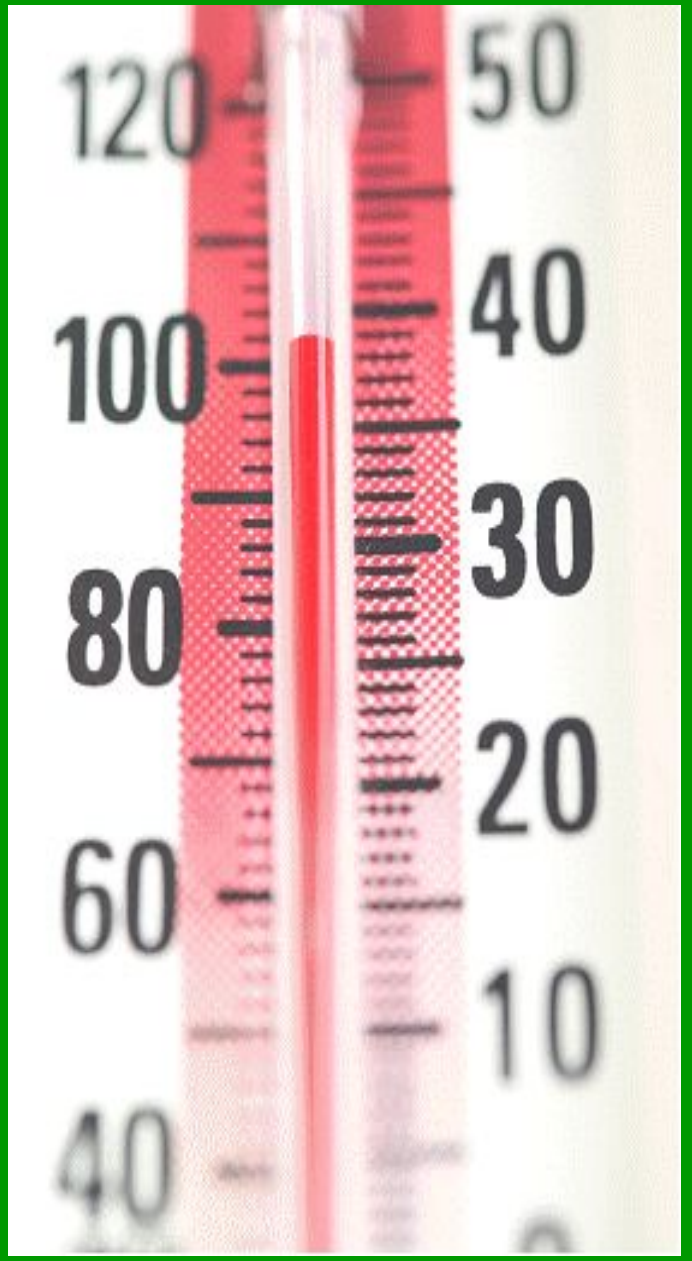
- **solar activity** – there is the close connection between death, birth and solar activity.

If there are spots on the sun surface, people have bad mood, their activity is reduced, there is an accentuation of chronic diseases, especially diseases of cardiovascular and central nervous systems.



- **weather** – it can have different influence to human organism. It influences to human behavior and psychological condition. Many peoples suffer foehnic disease 1-2 days before the beginning wind weather;

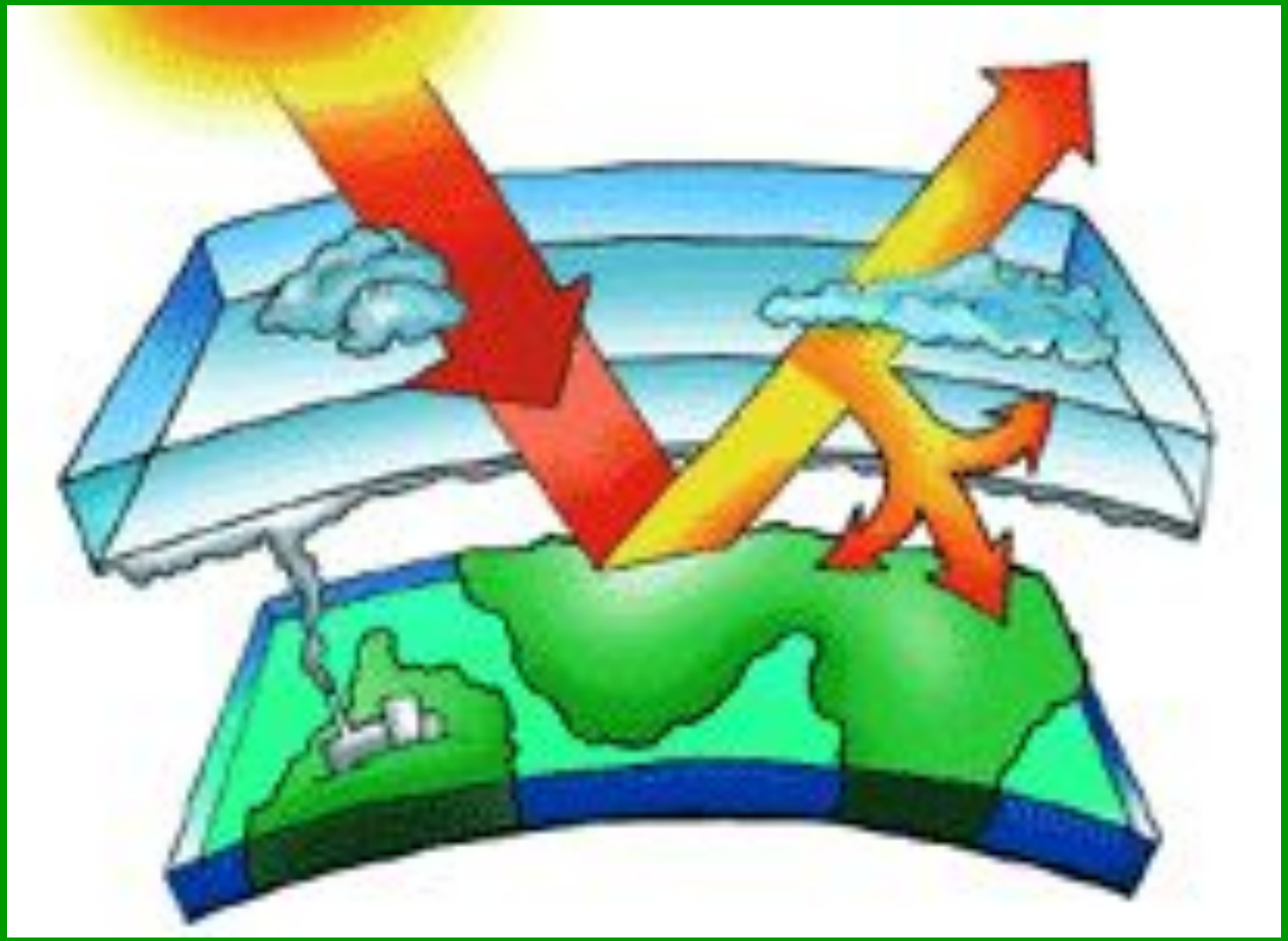
- **temperature** – high temperature can change the immunological reactionary of human organism, reduces the attention and causes anemia. Low temperature can change the system of thermoregulation of human organism. It reduces metabolism and immunological reactions to different infections.



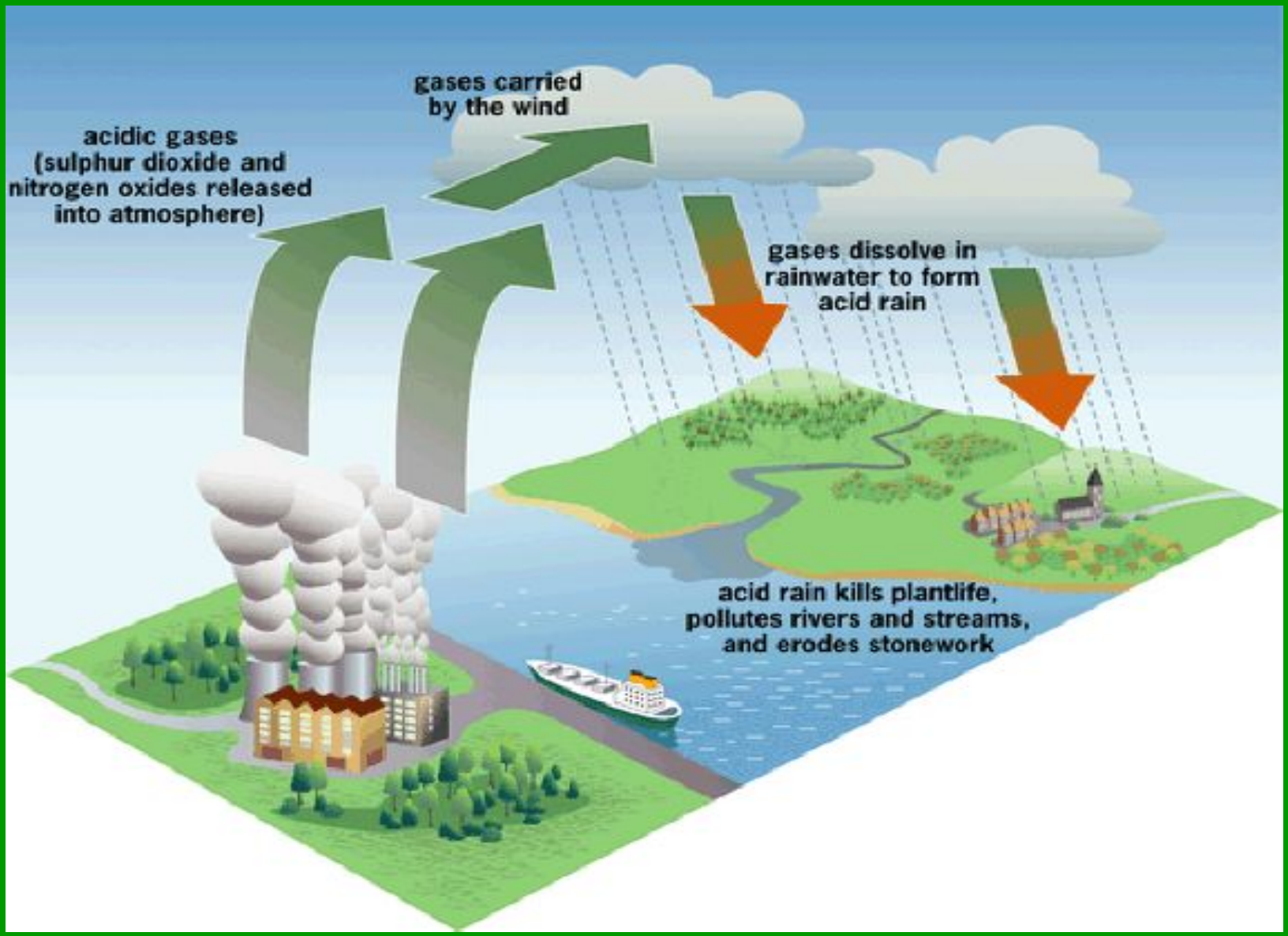
The influence of anthropogenic factors to human organism

- **ozone hole** – it can pass ultraviolet rays that hurt human cells, cause mutations (e.g. cancer);

- **greenhouse effect** – it is the increase of environmental temperature (global warming) that has negative influence to human organism;



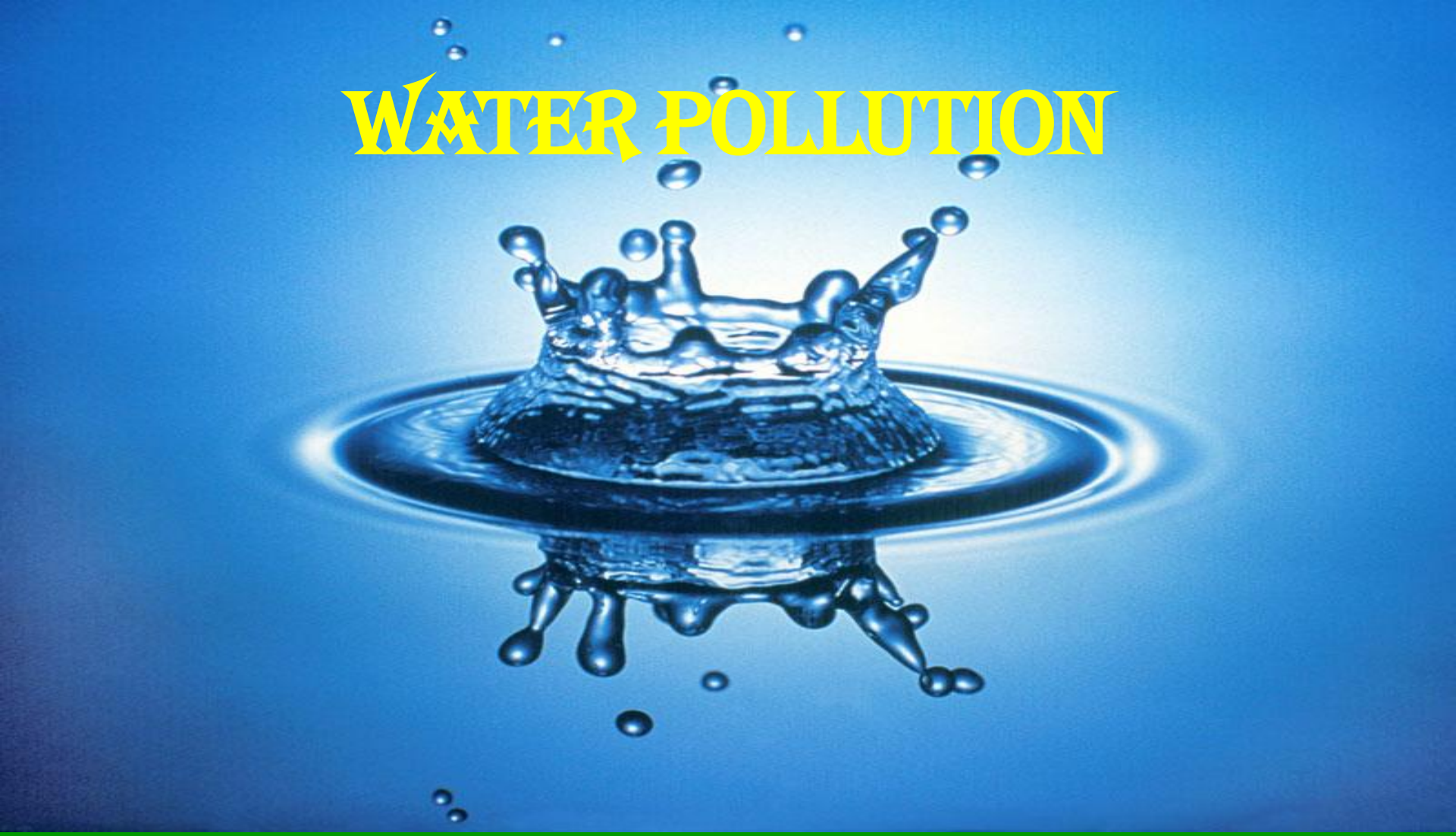
- **acid rains** – they can hurt human respiratory tracts and skin, attack fruits and vegetables;



- **photochemical fogs** – it is the mixture of different gases that are wastes from the plants of chemical industry and transport. It hurts human respiratory tracts and causes poisoning;

- **heavy metals** – lead, mercury, manganese, zinc, chromium etc. – they are poisons that hurt all organs and central nervous system in human organism, cause pathological changes in them.

WATER POLLUTION



Water is the most spread nonorganic substance in whole world. It is the basis of all processes in alive organisms and it is the unique source of oxygen in the process of photosynthesis. The biosphere would not exist without liquid water.

Hydrosphere is polluted with human help. Industrial wastes can include heavy metals and organic chlorides, such as pesticides. These materials are not destroyed under natural conditions. So they accumulate in the bottom mud of deltas of highly polluted rivers and cause environmental problems.

Water pollution

Mineral	Biological (bacterial)	Organic
Sand, mineral salts, acid and alkali solutions	Causative agents of cholera, dysentery, typhus etc.	plant and animal remains, animal and human feces

Every year 5 million peoples die in the result of poisoning by polluted water. Nowadays new diseases appear that are connected with chemical water pollution.

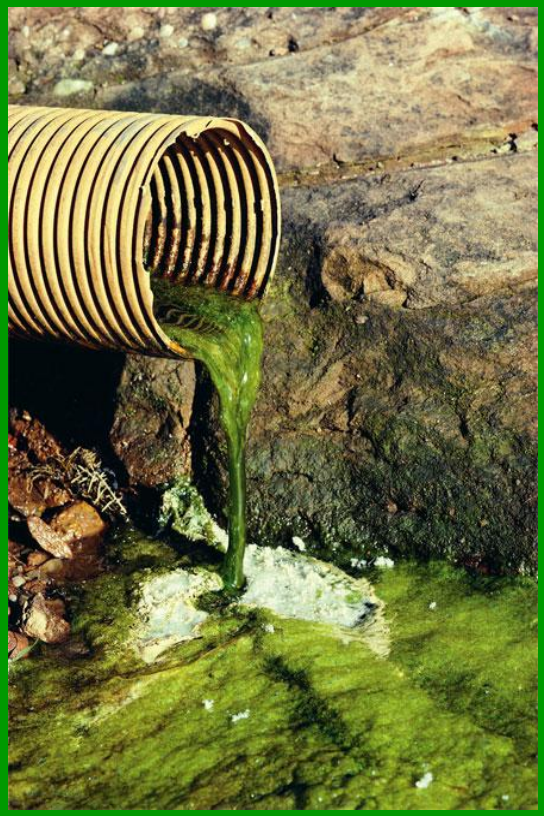
- ***Itay-itay*** **– it is the disease caused by water with high concentration of cadmium;**
- ***Minomata*** **– it is the disease caused by water with high concentration of mercury;**
- ***Molybdenum podagra*** **– it is the disease caused by water with high concentration of molybdenum;**
- ***Fluorosis*** **- it is the disease caused by water with high concentration of fluor.**

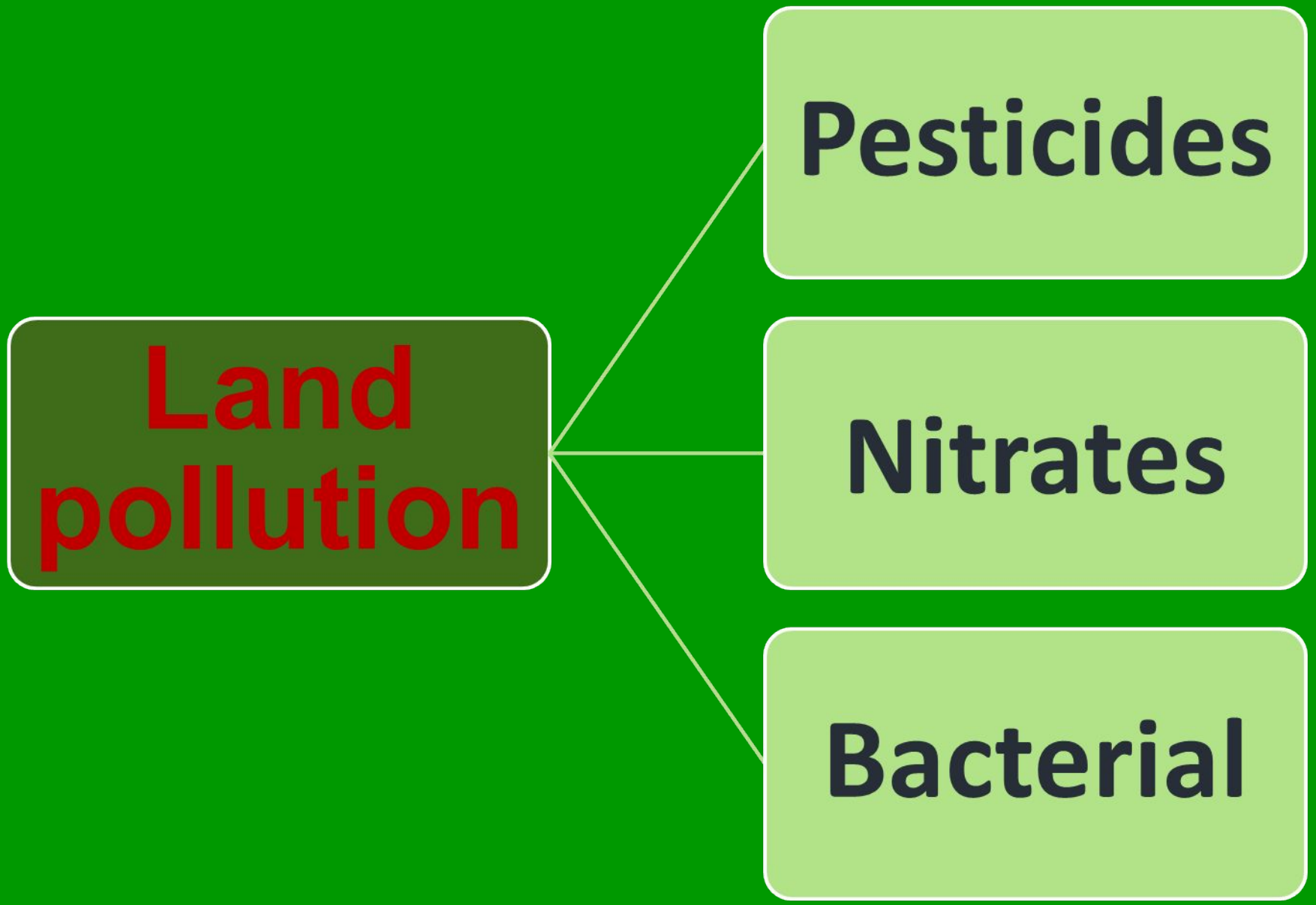
LAND POLLUTION

The geosphere and biosphere are intimately connected through soils, which consist of a mixture of air, mineral matters, organic matter, and water. Soils can accumulate almost all toxic substances.

The main sources of soil pollution are:

- Industry;
- Transport;
- Agriculture.




Land pollution
Pesticides
Nitrates
Bacterial

In agriculture people use pesticides and nitrates. These substances are very dangerous and toxic. They can cause mutations, cancer, pathological processes in central nervous system, respiratory and alimentary tracts, skin.

Human population poses a threat to the biosphere by habitat destruction, especially by the destruction of tropical rainforests (deforestation).

This process is driving thousands of species to extinction each year and reducing biological diversity.

The results of air pollution:

- Photochemical smog;
- Acid deposition;
- Global warming;
- Destruction of the ozone shield.

LOVE YOUR PLANET!
DON'T HARM IT!

THANK YOU FOR ATTENTION !