

INTERNATIONAL YEAR OF GLOBAL UNDERSTANDING-2016

International e-Seminar on Global understanding : Paper/Poster/Photo Presentation

Shri P. K. Chaudhari Mahila Arts College,
Gandhinagar, Gujarat (India)

RESEARCH REVIEW International Journal of
Multidisciplinary

GLOBAL 
understanding

CONFERENCE PROCEEDING ISSUE
OCTOBER -2016

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Published by Prowess Publishing,
YRK Towers, Thadikara Swamy Koil St, Alandur,
Chennai, Tamil Nadu 600016

ePUB ISBN: 978-1-5457-4758-2
Mobi ISBN: 978-1-5457-4759-9

Library of Congress Cataloging in Publication

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Role of Enthusiasm

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FOR THE ENTHUSIASTIC, EVEN ENEMIES BECOME FAVORABLE – CHANAKYA

Uthsaha - vatham satravah api vast – bhavanti

By now, in the 185 sutras of the first 18 chapters, Chanakya, has asked so many different things to be done (and not be done), that we start wondering how a manager can really implement them all. But reality, in fact is even more complicated and the one quality that is needed above all is utsahah – word which has many different meanings, all of which make sense for the manager's role: effort, exertion; perseverance, one for the three sakti (capabilities / powers) of a ruler, the other two being mantra and prabhava; determination, resolution; power, ability; firmness, fortitude, strength; and (in rhetoric) firmness/ fortitude which gives rise to heroic sentiment; and Lastly, happiness.

Indeed, a tremendous amount of energy, strength and perseverance over long periods of time is needed, which can all come only with a basically healthy body and mind. This is also a major reason for advocating absence from vices and adherence to ethics in true spirit.

For persons endowed with this kind of enthusiasm – utsahah – it is not only easy to motivate friends, but also to convert adversaries and enemies into supporters of his cause. The performance of the enthusiastic manager speaks for itself, gradually melting the negatives in the minds of the opposition. Such a manager, innately optimistic, will ensure that he does not directly criticize or offend his opponents in personal terms. He will find time to think through ways of winning them over to the cause, and will have the perseverance to implement such ways gradually over time.

Climate Change and Health

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Keywords: Climate change, social and environmental determinants of health, clean air, safe drinking water, sufficient food and secure shelter.

Over the last 50 years, human activities – particularly the burning of fossil fuels – have released sufficient quantities of carbon dioxide and other greenhouse gases to trap additional heat in the lower atmosphere and affect the global climate. In the last 130 years, the world has warmed by approximately 0.85°C. Each of the last 3 decades has been successively warmer than any preceding decade since 1850. Sea levels are rising, glaciers are melting and precipitation patterns are changing. Extreme weather events are becoming more intense and frequent. Although global warming may bring some localized benefits, such as fewer winter deaths in temperate climates and increased food production in certain areas, the overall health effects of a changing climate are likely to be overwhelmingly negative. Climate change affects social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter.

KEY FACTS

- ❖ Climate change affects the social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter.
- ❖ Between 2030 and 2050, climate change is expected to cause approximately 250 000 additional deaths per year, from malnutrition, malaria, diarrhea and heat stress.
- ❖ The direct damage costs to health (i.e. excluding costs in health-determining sectors such as agriculture and water and sanitation), is estimated to be between US\$ 2-4 billion/year by 2030.
- ❖ Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare

and respond.

- ❖ Reducing emissions of greenhouse gases through better transport, food and energy-use choices can result in improved health, particularly through reduced air pollution.

CLIMATE CHANGE

Over the last 50 years, human activities – particularly the burning of fossil fuels – have released sufficient quantities of carbon dioxide and other greenhouse gases to trap additional heat in the lower atmosphere and affect the global climate.

In the last 130 years, the world has warmed by approximately 0.85°C. Each of the last 3 decades has been successively warmer than any preceding decade since 1850.

Sea levels are rising, glaciers are melting and precipitation patterns are changing. Extreme weather events are becoming more intense and frequent.

WHAT IS THE IMPACT OF CLIMATE CHANGE ON HEALTH?

Although global warming may bring some localized benefits, such as fewer winter deaths in temperate climates and increased food production in certain areas, the overall health effects of a changing climate are likely to be overwhelmingly negative. Climate change affects social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter.

EXTREME HEAT

Extreme high air temperatures contribute directly to deaths from cardiovascular and respiratory disease, particularly among elderly people. In the heat wave of summer 2003 in Europe for example, more than 70 000 excess deaths were recorded².

High temperatures also raise the levels of ozone and other pollutants in the air that exacerbate cardiovascular and respiratory disease.

Pollen and other aeroallergen levels are also higher in extreme heat. These

can trigger asthma, which affects around 300 million people. Ongoing temperature increases are expected to increase this burden.

NATURAL DISASTERS AND VARIABLE RAINFALL PATTERNS

Globally, the number of reported weather-related natural disasters has more than tripled since the 1960s. Every year, these disasters result in over 60 000 deaths, mainly in developing countries.

Rising sea levels and increasingly extreme weather events will destroy homes, medical facilities and other essential services. More than half of the world's population lives within 60 km of the sea. People may be forced to move, which in turn heightens the risk of a range of health effects, from mental disorders to communicable diseases.

Increasingly variable rainfall patterns are likely to affect the supply of fresh water. A lack of safe water can compromise hygiene and increase the risk of diarrheal disease, which kills approximately 760 000 children aged under 5, every year. In extreme cases, water scarcity leads to drought and famine. By the late 21st century, climate change is likely to increase the frequency and intensity of drought at regional and global scale¹.

Floods are also increasing in frequency and intensity, and the frequency and intensity of extreme precipitation is expected to continue to increase throughout the current century¹. Floods contaminate freshwater supplies, heighten the risk of water-borne diseases, and create breeding grounds for disease-carrying insects such as mosquitoes. They also cause drownings and physical injuries, damage homes and disrupt the supply of medical and health services.

Rising temperatures and variable precipitation are likely to decrease the production of staple foods in many of the poorest regions. This will increase the prevalence of malnutrition and under nutrition, which currently cause 3.1 million deaths every year.

PATTERNS OF INFECTION

Climatic conditions strongly affect water-borne diseases and diseases transmitted through insects, snails or other cold blooded animals.

Changes in climate are likely to lengthen the transmission seasons of important vector-borne diseases and to alter their geographic range. For example, climate change is projected to widen significantly the area of China where the snail-borne disease schistosomiasis occurs³.

Malaria is strongly influenced by climate. Transmitted by Anopheles mosquitoes, malaria kills almost 600 000 people every year – mainly African children under 5 years old. The Aedes mosquito vector of dengue is also highly sensitive to climate conditions, and studies suggest that climate change is likely to continue to increase exposure to dengue.

MEASURING THE HEALTH EFFECTS

Measuring the health effects from climate change can only be very approximate. Nevertheless, a WHO assessment, taking into account only a subset of the possible health impacts, and assuming continued economic growth and health progress, concluded that climate change is expected to cause approximately 250 000 additional deaths per year between 2030 and 2050; 38 000 due to heat exposure in elderly people, 48 000 due to diarrhea, 60 000 due to malaria, and 95 000 due to childhood undernutrition⁴.

WHO IS AT RISK?

All populations will be affected by climate change, but some are more vulnerable than others. People living in small island developing states and other coastal regions, megacities, and mountainous and polar regions are particularly vulnerable.

Children – in particular, children living in poor countries – are among the most vulnerable to the resulting health risks and will be exposed longer to the health consequences. The health effects are also expected to be more severe for elderly people and people with infirmities or pre-existing medical conditions.

Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond.

WHO RESPONSE

Many policies and individual choices have the potential to reduce greenhouse

gas emissions and produce major health co-benefits. For example, cleaner energy systems, and promoting the safe use of public transportation and active movement – such as cycling or walking as alternatives to using private vehicles – could reduce carbon emissions, and cut the burden of household air pollution, which causes some 4.3 million deaths per year, and ambient air pollution, which causes about 3.7 million deaths every year.

In 2015, the WHO Executive Board endorsed a new work plan on climate change and health. This includes:

Partnerships:

To coordinate with partner agencies within the UN system, and ensure that health is properly represented in the climate change agenda.

Awareness rising:

To provide and disseminate information on the threats that climate change presents to human health and opportunities to promote health while cutting carbon emissions.

Science and evidence:

To coordinate reviews of the scientific evidence on the links between climate change and health, and develop a global research agenda.

Support for implementation of the public health response to climate change:

To assist countries to build capacity to reduce health vulnerability to climate change, and promote health while reducing carbon emissions.

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Water Pollution and Health

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Keywords: water pollution, water contamination, Health impact, Treatment,

It is a well-known fact that clean water is absolutely essential for healthy living. Adequate supply of fresh and clean drinking water is a basic need for all human beings on the earth, yet it has been observed that millions of people worldwide are deprived of this.

WATER POLLUTION

Water covers over 70% of the Earth's surface and is a very important resource for people and the environment. Water pollution affects drinking water, rivers, lakes and oceans all over the world. This consequently harms human health and the natural environment. Here you can find out more about water pollution and what you can do to prevent it.

TYPES OF WATER POLLUTION

Water pollution can come from a number of different sources. If the pollution comes from a single source, such as an oil spill, it is called point-source pollution. If the pollution comes from many sources, it is called nonpoint-source pollution.

Most types of pollution affect the immediate area surrounding the source. Sometimes the pollution may affect the environment hundreds of miles away from the source, such as nuclear waste, this is called trans boundary pollution.

- Surface water pollution
- Oxygen depleting
- Ground water,
- Nutrients

- Microbiological
- Suspended matter
- Chemical

THE CAUSES OF WATER POLLUTION

- Sewage and wastewater
- Marine dumping
- Industrial water
- Radioactive waste
- Oil pollution
- Underground storage leakages
- Atmospheric deposition
- Global warming
- Eutrophication

HEALTH IMPACTS OF WATER POLLUTION

Virtually all types of water pollution are harmful to the health of humans and animals. Water pollution may not damage our health immediately but can be harmful after long term exposure. Different forms of pollutants affect the health of animals in different ways.

Freshwater resources all over the world are threatened not only by over exploitation and poor management but also by ecological degradation. The main source of freshwater pollution can be attributed to discharge of untreated waste, dumping of industrial effluent, and run-off from agricultural fields. Industrial growth, urbanization and the increasing use of synthetic organic substances have serious and adverse impacts on freshwater bodies. It is a generally accepted fact that the developed countries suffer from problems of chemical discharge into the water sources mainly groundwater, while developing countries face problems of agricultural run-off in water sources. Polluted water like chemicals in drinking water causes problem to health and leads to water-borne diseases which can be prevented by taking measures can be taken even at the household level.

GROUNDWATER AND ITS CONTAMINATION

Many areas of groundwater and surface water are now contaminated with heavy metals, POPs (persistent organic pollutants), and nutrients that have an adverse affect on health. Water-borne diseases and water-caused health problems are mostly due to inadequate and incompetent management of water resources. Safe water for all can only be assured when access, sustainability, and equity can be guaranteed. Access can be defined as the number of people who are guaranteed safe drinking water and sufficient quantities of it. There has to be an effort to sustain it, and there has to be a fair and equal distribution of water to all segments of the society. Urban areas generally have a higher coverage of safe water than the rural areas. Even within an area there is variation: areas that can pay for the services have access to safe water whereas areas that cannot pay for the services have to make do with water from hand pumps and other sources.

In the urban areas water gets contaminated in many different ways, some of the most common reasons being leaky water pipe joints in areas where the water pipe and sewage line pass close together. Sometimes the water gets polluted at source due to various reasons and mainly due to inflow of sewage into the source.

Ground water can be contaminated through various sources and some of these are mentioned below.

Pesticides- Run-off from farms, backyards, and golf courses contain pesticides such as DDT that in turn contaminate the water. Leech ate from landfill sites is another major contaminating source. Its effects on the ecosystems and health are endocrine and reproductive damage in wildlife. Groundwater is susceptible to contamination, as pesticides are mobile in the soil. It is a matter of concern as these chemicals are persistent in the soil and water.

Sewage- Untreated or inadequately treated municipal sewage is a major source of groundwater and surface water pollution in the developing countries. The organic material that is discharged with municipal waste into the watercourses uses substantial oxygen for biological degradation thereby upsetting the ecological balance of rivers and lakes. Sewage also carries microbial pathogens that are the cause of the spread of disease.

Nutrients-Domestic waste water, agricultural run-off, and industrial effluents contain phosphorus and nitrogen, fertilizer run-off, manure from livestock operations, which increase the level of nutrients in water bodies and can cause

eutrophication in the lakes and rivers and continue on to the coastal areas. The nitrates come mainly from the fertilizer that is added to the fields. Excessive use of fertilizers cause nitrate contamination of groundwater, with the result that nitrate levels in drinking water is far above the safety levels recommended. Good agricultural practices can help in reducing the amount of nitrates in the soil and thereby lower its content in the water.

Synthetic organics- Many of the 100 000 synthetic compounds in use today are found in the aquatic environment and accumulate in the food chain. POPs or Persistent organic pollutants represent the most harmful element for the ecosystem and for human health, for example, industrial chemicals and agricultural pesticides. These chemicals can accumulate in fish and cause serious damage to human health. Where pesticides are used on a large-scale, groundwater gets contaminated and this leads to the chemical contamination of drinking water.

Acidification- Acidification of surface water, mainly lakes and reservoirs, is one of the major environmental impacts of transport over long distance of air pollutants such as sulphur dioxide from power plants, other heavy industry such as steel plants, and motor vehicles. This problem is more severe in the US and in parts of Europe.

CHEMICALS IN DRINKING WATER

Chemicals in water can be both naturally occurring or introduced by human interference and can have serious health effects.

Fluoride-Fluoride in the water is essential for protection against dental caries and weakening of the bones, but higher levels can have an adverse effect on health. In India, high fluoride content is found naturally in the waters in Rajasthan.

Arsenic-Arsenic occurs naturally or is possibly aggravated by over powering aquifers and by phosphorus from fertilizers. High concentrations of arsenic in water can have an adverse effect on health. A few years back, high concentrations of this element was found in drinking water in six districts in West Bengal. A majority of people in the area was found suffering from arsenic skin lesions. It was felt that arsenic contamination in the groundwater was due to natural causes. The government is trying to provide an alternative drinking water source and a method through which the arsenic content from water can be

removed.

Lead- Pipes, fittings, solder, and the service connections of some household plumbing systems contain lead that contaminates the drinking water source.

Recreational use of water- Untreated sewage, industrial effluents, and agricultural waste are often discharged into the water bodies such as the lakes, coastal areas and rivers endangering their use for recreational purposes such as swimming and canoeing.

Petrochemicals- Petrochemicals contaminate the groundwater from underground petroleum storage tanks.

Other heavy metals- These contaminants come from mining waste and tailings, landfills, or hazardous waste dumps.

Chlorinated solvents- Metal and plastic effluents, fabric cleaning, electronic and aircraft manufacturing are often discharged and contaminate groundwater.

Water-borne diseases are infectious diseases spread primarily through contaminated water. Though these diseases are spread either directly or through flies or filth, water is the chief medium for spread of these diseases and hence they are termed as water-borne diseases.

Most intestinal (enteric) diseases are infectious and are transmitted through faecal waste.

Pathogens – which include virus, bacteria, protozoa, and parasitic worms – are disease-producing agents found in the faeces of infected persons. These diseases are more prevalent in areas with poor sanitary conditions. These pathogens travel through water sources and interfuses directly through persons handling food and water. Since these diseases are highly infectious, extreme care and hygiene should be maintained by people looking after an infected patient. Hepatitis, cholera, dysentery, and typhoid are the more common water-borne diseases that affect large populations in the tropical regions.

Disease Cause	Water-borne diseases
Bacterial infections	Typhoid, Paratyphoid fever, Bacillary dysentery

Viral infections	Infectious Hepatitis (jaundice), Poliomyelitis
Protozoal infections	Amoebic dysentery

A large number of chemicals that either exist naturally in the land or are added due to human activity dissolve in the water, thereby contaminating it and leading to various diseases.

Pesticides- The organophosphates and the carbonates present in pesticides affect and damage the nervous system and can cause cancer. Some of the pesticides contain carcinogens that exceed recommended levels. They contain chlorides that cause reproductive and endocrinal damage.

Lead-Lead is hazardous to health as it accumulates in the body and affects the central nervous system. Children and pregnant women are most at risk.

Fluoride- Excess fluorides can cause yellowing of the teeth and damage to the spinal cord and other crippling diseases.

Nitrates-Drinking water that gets contaminated with nitrates can prove fatal especially to infants that drink formula milk as it restricts the amount of oxygen that reaches the brain causing the ‘blue baby’ syndrome. It is also linked to digestive tract cancers. It causes algae to bloom resulting in eutrophication in surface water.

Petrochemicals-Benzene and other petrochemicals can cause cancer even at low exposure levels.

Chlorinated solvents- These are linked to reproduction disorders and to some cancers.

Arsenic-Arsenic poisoning through water can cause liver and nervous system damage, vascular diseases and also skin cancer.

Other heavy metals- Heavy metals cause damage to the nervous system and the kidney, and other metabolic disruptions.

Salts-It makes the fresh water unusable for drinking and irrigation purposes.

Exposure to polluted water can cause diarrhea, skin irritation, respiratory

problems, and other diseases, depending on the pollutant that is in the water body. Stagnant water and other untreated water provide a habitat for the mosquito and a host of other parasites and insects that cause a large number of diseases especially in the tropical regions. Among these, malaria is undoubtedly the most widely distributed and causes most damage to human health.

TREATMENT

Decisions on the type and degree of treatment and control of wastes, and the disposal and use of adequately treated wastewater, must be based on a consideration all the technical factors of each drainage basin, in order to prevent any further contamination or harm to the environment.

INDUSTRIAL WATER AND WATER POLLUTION

Industry is a huge source of water pollution, it produces pollutants that are extremely harmful to people and the environment.

Many industrial facilities use freshwater to carry away waste from the plant and into rivers, lakes and oceans.

POLLUTANTS FROM INDUSTRIAL SOURCES INCLUDE

Asbestos – This pollutant is a serious health hazard and carcinogenic. Asbestos fibers can be inhaled and cause illnesses such as asbestosis, mesothelioma, lung cancer, intestinal cancer and liver cancer.

Lead – This is a metallic element and can cause health and environmental problems. It is a non-biodegradable substance so is hard to clean up once the environment is contaminated. Lead is harmful to the health of many animals, including humans, as it can inhibit the action of bodily enzymes.

Mercury – This is a metallic element and can cause health and environmental problems. It is a non-biodegradable substance so is hard to clean up once the environment is contaminated. Mercury is also harmful to animal health as it can cause illness through mercury poisoning.

Nitrates – The increased use of fertilizers means that nitrates are more often being washed from the soil and into rivers and lakes. This can cause

eutrophication, which can be very problematic to marine environments.

Phosphates – The increased use of fertilizers means that phosphates are more often being washed from the soil and into rivers and lakes. This can cause eutrophication, which can be very problematic to marine environments.

Sulphur – This is a non-metallic substance that is harmful for marine life.

Oils – Oil does not dissolve in water, instead it forms a thick layer on the water surface. This can stop marine plants receiving enough light for photosynthesis. It is also harmful for fish and marine birds.

Petrochemicals – This is formed from gas or petrol and can be toxic to marine life.

SEPTIC TANKS AND SEWAGE TREATMENT

Septic tanks treat sewage at the place where it is located, rather than transporting the waste through a treatment plant or sewage system. Septic tanks are usually used to treat sewage from an individual building.

Untreated sewage from a property flows into the septic tank and the solids are separated from the liquid.

Solid material is separated depending on their density. Heavier particles settle at the bottom of the tank whereas lighter particles, such as soap scum, will form a layer at the top of the tank.

Biological processes are used to help degrade the solid materials.

The liquid then flows out of the tank into a land drainage system and the remaining solids are filtered out.

DENITRIFICATION

Denitrification is an ecological approach that can be used to prevent the leaching of nitrates in soil; this in turn stops any ground water from being contaminated with nutrients.

- Fertilizers contain nitrogen, and are often applied to crops by farmers to help plant growth and increase the yield.
- Bacteria in the soil convert the nitrogen in the fertilizer to nitrates, making it easier for the plants to absorb.
- Immobilization is a process where the nitrates become part of the soil organic matter.
- When oxygen levels are low, another form of bacteria then turns the nitrates into gases such as nitrogen, nitrous oxide and nitrogen dioxide.
- The conversion of these nitrates into gas is called denitrification. This prevents nitrates from leaching into the soil and contaminating groundwater.

OZONE WASTEWATER TREATMENT

Ozone wastewater treatment is a method that is increasing in popularity. An ozone generator is used to break down pollutants in the water source.

The generators convert oxygen into ozone by using ultraviolet radiation or by an electric discharge field.

Ozone is a very reactive gas that can oxidize bacteria, moulds, organic material and other pollutants found in water.

Using ozone to treat wastewater has many benefits:

- Kills -- bacteria effectively.
- Oxidizes substances such as iron and sulphur so that they can be filtered out of the solution.
- There are no nasty odors or residues produced from the treatment.
- Ozone converts back into oxygen quickly, and leaves no trace once it has been used.

The disadvantages of using ozone as a treatment for wastewater are:

- The treatment requires energy in the form of electricity; this can cost
- Money and cannot work when the power is lost.
- The treatment cannot remove dissolved minerals and salts.
- Ozone treatment can sometimes produce by-products such as bromated

That can harm human health if they are not controlled.

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INTERNATIONAL YEAR OF
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-: Vitaragabhayakrodha manmaya
mamupasritah |
bahavo jnanatapasa putu
madbhavanugatah || 4-10 ||

-: The road to good is the roughest
and steepest in the universe. It is a wonder
so many succeed, no wonder that so
many fall. character has to be established
through a thousand stumbles.

- Swami Vivekananda



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INTERNATIONAL YEAR OF
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2016

*

A man should uplift himself by
his own self, so let him not
Weaken this Self For this Self is
the friend of oneself, and this
Self is the enemy of oneself
6-5

*

Man begins to struggle and fight
against nature. He makes many
mistakes, he suffers but eventually he
conquers nature and realizes his freedom.
When he is free nature becomes his slave.

- Swami Vivekananda

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