DID YOU KNOW…? FACTS AND FIGURES ABOUT WASTEWATER.

- Wastewater has been defined as the water discharged from a community after it has been fouled by various uses and containing waste, i.e. liquid or solid matter. It may be a combination of the liquid or water-carried domestic, municipal and industrial wastes, together with such groundwater, surface water and storm water as may be present.
- Population growth, rapid urbanization, and increasing water supply and sanitation provision will all generate increased problems from wastewater pollution.
- It has been estimated that the total global volume of wastewater produced in 1995 was in excess of 1,500 km^3.
- There is the understanding that each litre of wastewater pollutes at least 8 litres of freshwater, so that on this basis some 12,000 km^3 of the globe's water resources is not available for use each year. If this figure keeps pace with population growth, then with an anticipated population of 9 billion by 2050, the world's water resources would be reduced by some 18,000 km^3 annually.
- At present, only about a tenth of the domestic wastewater in developing countries is collected and only about a tenth of existing wastewater treatment plants operates reliably and efficiently.
- Some of the damage associated with inadequate handling of wastewater are:
    - - increased direct and indirect costs caused by increased illness and mortality
    - - higher costs for producing drinking and industrial water, resulting in higher tariffs
    - - loss of income from fisheries and aquaculture
    - - poor water quality, which deters tourists, immediately lowering income from tourism
    - - loss of valuable biodiversity
    - - loss in real estate values, when the quality of the surroundings deteriorates: especially important for slum dwellers where housing is the primary asset.
- Untreated sewage affects over 70% of coral reefs, precious habitats are disappearing and biodiversity is decreasing, fishing and agricultural potential are being lost, while poor water quality is reducing income from tourism and the value of real estate.
- The global burden of human disease caused by sewage pollution of coastal waters has been estimated at 4 million lost person-years annually.
- In March 2003, the World Panel on Financing Water Infrastructure estimated that US $56 billion was needed annually for wastewater treatment in order to achieve the target on sanitation.

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- In the State of Mexico (Mexico), wastewater is generated approximately at the rate of 30 m^3 per second (m^3/s), about 19% of which is directly discharged without any kind of treatment.

Information from the International Glossary of Hydrology (http://www.cig.ensmp.fr/~hubert/glu/aglo.htm), the 1st United Nations World Water Development Report: 'Water for People, Water for Life' (http://www.unesco.org/water/wwap/wwdr1/), the 2nd United Nations World Water

Development Report: 'Water, a shared responsibility' (http://www.unesco.org/water/wwap/wwdr2/table_contents.shtml) and from the United Nations Environment Programme (UNEP) Magazine 'Our Planet' (http://www.unep.org/OurPlanet/imgversn/144/images/Our_Planet_14.4_english.pdf) [PDF format – 1.11 MB]

PUBLICATIONS RELATED TO WASTEWATER

Practices and experiences of water and wastewater technology. Proceedings of the Seminar organized by the Regional Centre on Urban Water Management (RCUWM-Tehran) 5-7 October 2004, Muscat, Sultanate of Oman
By UNESCO's International Hydrological Programme (IHP); © 2006 UNESCO-IHP

Population growth in urban areas results in increased water demands and puts pressure on finite water resources. The resulting difficulties in managing water and wastewater lead to social, environmental and financial challenges. This seminar was organized to provide a positive way forward by helping to focus on regionally important problems and identify deficiencies, potential risks and threats associated with current means of water and wastewater management, while also enabling participants to suggest realistic solutions.
The proceedings include the papers presented, as well as the outcomes of the seminar, in the hope that they will be helpful for decision makers, experts and those involved in urban water management in the Arab States region.

:: Access the full publication [PDF format – 3.31 MB]
http://unesdoc.unesco.org/images/0014/001460/146009e.pdf

Guidelines for the Safe Use of Wastewater, Excreta and Greywater
By the World Health Organization (WHO); © 2006 WHO

The third edition of the WHO Guidelines for the safe use of wastewater, excreta and grey water has been extensively updated to take account of new scientific evidence and contemporary approaches to risk management. The revised Guidelines reflect a strong focus on disease prevention and public health principles.
This new edition responds to a growing demand from WHO Member States for guidance on the safe use of wastewater, excreta and grey water in agriculture and aquaculture.

The Guidelines are presented in four separate volumes: Volume 1: Policy and regulatory aspects; Volume 2: Wastewater use in agriculture; Volume 3: Wastewater and excreta use in aquaculture; and Volume 4: Excreta and grey water use in agriculture.

:: Access the full publication http://www.who.int/water_sanitation_health/wastewater/gsuww/en/index.html

LINKS ABOUT WASTEWATER

Wastewater use
http://www.who.int/water_sanitation_health/wastewater/en/
This World Health Organization's (WHO) section explains what wastewater use is, contains the WHO Guidelines for the safe use of wastewater, excreta and grey water, and related documents.

Wastewater
http://www.epa.qld.gov.au/environmental_management/water/wastewater
This website of the Environmental Protection Agency (EPA), of the Queensland Government (Australia), contains answers to different questions such as: Where does wastewater come from? What is wastewater treatment? What happens in a sewage treatment plant? How is wastewater managed? Is wastewater treatment effective?
What are future directions? And: How can I help?

:: For a complete list of water links around the world visit http://www.unesco.org/water/water_links/

The causes of water contamination

"Man has lost the capacity to foresee and to forestall. He will end by destroying the earth." Albert Schweitzer

The causes of water contamination are numerous and range from agricultural runoff to improper use of household chemicals and everything in between. While the standard use in our society of over 75,000 different chemical compounds has offered added convenience and productivity in our lives, it has also come at a tremendous price.

Drastic increase in degenerative diseases. In the early 1900s, before chlorine, pesticides, herbicides and the tens of thousands of other chemicals that we are exposed to, the average person had a 1 in 50 chance of getting cancer, today 1 in 3 can expect to get cancer in their lifetime, one out of every 2 men.

Man Made Chemicals and Contaminants in Our Water

Our use of man made chemicals has become so extreme that we can now find traces of these low level toxins in virtually every public water supply in the world. A recent report by the Ralph Nader Study Group, after reviewing over 10,000 documents

acquired through the Freedom Of Information Act, stated that "U.S. drinking water contains more than 2100 toxic chemicals that can cause cancer."

The Federal Council On Environmental Quality report that, "Up to two thirds of all cancers may be attributed to these low level toxins." and that "once contaminated our ground water will remain so for tens of thousands of years, if not geologic time!"

Our tendency is to blame it on the big factory up stream. And while industry has certainly played its part in our water contamination problems, it is "us" as individuals that are the most to blame.

The majority of the contaminants found in our drinking water can be traced back to improper or excessive use of ordinary compounds like lawn chemicals, gasoline, cleaning products and even prescription drugs.

Once we realize that everything that goes down the drain, on our lawns, on our agricultural fields or into the environment by any means, eventually winds up in the water we drink, we begin to see just how fragile our water supplies really are.

Water Treatment Facilities are not Enough

Our municipal water treatment facilities are not designed or effective for removing these synthetic chemicals and typically only consist of sand bed filtration and disinfection, much like a standard swimming pool filter.

For the most part today's water treatment facilities are much the same as they were at the turn of the century. "Drinking water plants are old and out of date, and water supplies are increasingly threatened by and contaminated by chemicals and microorganisms." Natural Resources Defense Council. "The way we guarantee safe drinking water is broken and needs to be fixed." Carol Browner, U.S. EPA.

Authorities on Water Contamination Reports on Risk of Disease and Children

One of America's leading authorities on water contamination, Dr. David Ozonoff of the Boston University Of Public Health warns that, "the risk of disease associated with public drinking water has passed from the theoretical to the real. "Many illnesses that in the past could not be linked to a probable cause, can now be directly linked to toxins in our drinking water.

The use of pesticides and herbicides has become so excessive that they are now commonly found in household tap water with alarming frequency.

A 1994 study of 29 major U.S. cities by the Environmental Working Group found that all 29 cities had traces of at least one weed killer in the drinking water. The report titled "Tap Water Blues" went on to say that "Millions of Americans are routinely exposed to one or more pesticides in a single glass of tap water."

These first ever "tap water tests" found two or more pesticides in the drinking water of 27 of the 29 cities, three or more in 24 cities, four or more in 21 cities, five or more in 18 cities, six or more in 13 cities and seven or more pesticides in the tap water of five cities. In Fort Wayne Indiana nine different pesticides were found in a single glass of tap water!

As a startling side note it was reported that in these 29 cities 45,000 infants drank formula mixed with tap water containing weed killers and that "over half of these infants were swallowing 4 to 9 chemicals in every bottle!"

The tragic health effects of consuming these highly toxic chemicals are magnified many times over for small children because their systems are more sensitive and still developing. Small children also consume a much larger volume of fluids per pound of body weight and therefore get a bigger dose, yet non of these factors are considered when the EPA's maximum contaminant levels are set.

The National Academy of Sciences issued a report in 1993 on this subject and stated that "children are not little adults, their bodies are less developed and incapable of detoxifying certain harmful compounds."

Water Regulation Tests Give False Assumption

Another major flaw in the estimated risks of chemicals in our drinking water is the false assumption that only that one chemical is being consumed. The regulations are set based on what is assumed safe for a 175 pound adult drinking water with only that one chemical present and does not take into account the combined toxicity of two or more chemicals.

In a 1995 Science Advisory Report to the EPA it was stated that "when two or more of these contaminants combine in our water the potency may be increased by as much as 1000 times." Regardless of the differing opinions it is safe to assume that there is no acceptable level for pesticides and weed killers in our drinking water.

In America each year we use over 2.2 billion pounds of pesticides, or eight pounds for every man woman and child in the country.

Industrial solvents like TCE and Benzene make their way into our water supplies from literally hundreds of sources. Airports and military bases degrease planes and engine parts with TCE, one of the most concentrated toxins in existence. One teaspoon of TCE will render undrinkable over 250,000 gallons of water, and yet thousands of gallons are used in uncontained applications each day.

Perchlorethelyne, cyanide, and benzene are used in such common industries as dry cleaning, car washes and photo processing, much of which ends up going down someone's drain and into our water supplies. It has been shown that areas with the highest levels of these man made carcinogens in their water supplies also have the highest incidence of cancer.

Jacquelyn Warren of the Natural Resources Defense Council commented on this subject, "The one thing we know for sure about toxins in our drinking water is that

the more we look the more we find" Cancer extracts a staggering toll from our society, one in every seven people will die from this man made disease.

Center for Disease Control

According to the Center For Disease Control "Death from cancer is increasing more rapidly than is the population." It is now widely accepted that cancer is an environmental disease.

The World Health Organization and the National Cancer Institute both suggest that most human cancers, perhaps as many as 90% are caused by chemical carcinogens in the environment. This realization is paramount for change because it means that most cancers could be prevented by minimizing, or eliminating our exposure to chemical carcinogens.

While the powerful chemical industry argues that the levels of these toxins in the environment are not significant, scientific evidence has shown otherwise. A National Cancer Institute report to the Surgeon General concluded that no level of exposure to a chemical carcinogen should be considered toxicologically insignificant for man.

We spend billions of dollars each year seeking a cure for cancer. The disease is merely a result of the real problem, environmental pollution. If we were to direct these billions of dollars and the same intense effort towards curing the problem (pollution) instead of learning to live with the result (cancer) we would do future generations a great service, and we could realistically stop the cancer epidemic.

Protect Your Family Against Water Contamination – it is your responsibility.