

MEDIA INFORMATION

Industrial sources of environmental toxins endangering 200 million people worldwide

CH-Zurich – 26 October 2016 – The Environmental Toxin Report 2016 from the environmental organisations Green Cross Switzerland and Pure Earth, New York, provides information about the world's ten most dangerous sources of environmental toxins and quantifies the magnitude of the adverse effects on health caused by toxic substances worldwide in DALYs.

Although the majority of environmental toxins are contributors to global morbidity and mortality, few publications are available on this subject. At the same time, pollution is increasing as a result of the rapid expansion of urbanisation and industrialisation and the informal economy, particularly in low and middle-income countries (LMIC). Abandoned mines, ironworks, refineries and industrial plants represent the largest part of these hazardous waste sites. Long-lasting environmental toxins present the major risk to human health, e.g. heavy metals, persistent organic pollutants (POPs), including persistent prohibited pesticides and radionuclides. The metals causing the greatest concern are mercury from mining, lead from smelting processes and improperly recycled batteries as well as chromium from the tanning of leather. Sources of environmental toxins and toxic substances are verifiably endangering the health of approximately 200 million people worldwide.

“The UN member states, which approved Agenda 2030, are called upon to take steps to reduce chemicals and toxic waste”, says Nathalie Gysi, Executive Director of Green Cross Switzerland. According to Richard Fuller, founder of Pure Earth, New York, the worst cases of environmental pollution within these industries are attributable to unregulated, small-scale activities with a high level of contamination and larger sources of environmental toxins which have been shut down by now. The reason for this are lack of knowledge regarding best practices and technologies as well as a lack of oversight.

Sources of environmental toxins are the cause of 17.78 million lost years of life (DALYs)

The Environmental Toxin Report 2016 quantifies the negative impact on health resulting from the sources of environmental toxins and the related pollutants in Disability Adjusted Life Years (DALYs). The lost life years due to premature death and the effects on the quality of life due to ill health are measured by these DALYs. Based on the database of the Toxic Sites Identification Program (TSIP) 17.78 million DALYs are attributable to toxic substances from ten sources of environmental toxins in the 49 countries that were analysed. The Environmental Toxin Report 2016 is available for downloading in English on 26 October 2016 from 9 a.m. CEST on at www.greencross.ch.

The ten most dangerous sources of environmental toxins in 2016 and the related pollutants:

(ranked according to the number of lost life years DALYs)

- 1. Battery recycling:** up to 4.8 million lost life years due to lead
- 2. Mining and ore processing:** up to 2.6 million lost life years due to lead, chromium, mercury
- 3. Lead smelting:** up to 2.5 million lost life years due to lead
- 4. Tannery operations:** up to 2.0 million lost life years due to lead, chromium
- 5. Artisanal gold mining:** up to 1.6 million lost life years due to lead, chromium, mercury
- 6. Industrial and municipal disposal sites:** up to 1.2 million lost life years due to lead, chromium
- 7. Industrial estates:** up to 1.2 million lost life years due to lead, chromium
- 8. Chemical manufacturing:** up to 0.75 million lost life years due to lead, chromium
- 9. Product manufacturing:** up to 0.7 million lost life years due to lead, chromium
- 10. Dye industry:** 0.43 million lost life years due to lead, chromium

Remaining five sources of environmental toxins

Other significant sources of environmental toxins are the petrochemical industry, improper recycling and disposal of electronic waste, heavy industry, pesticide production as well as uranium mining and processing. They contribute nearly 5 million DALYs and endanger approximately 6.6 million people worldwide.

Chemical seepage contaminates the soil and pollutes the groundwater used for drinking, washing and bathing. In addition, many toxins find their way into rivers or the air through contaminated dust and particles, which considerably increases the potentially endangered population.

Overview of the ten most dangerous industrial sources of environmental toxins worldwide in 2016

Recycling of lead-acid batteries

In countries with low and middle income (LMIC) informal recycling activities are widespread. Lead-acid batteries are cracked open with axes or hammers, the metal parts are smelted outdoors or inside of private homes and toxic waste is disposed untreated in the environment. In these informal recycling processes, toxins are most frequently distributed by emissions and dust stirred up by the smelting and pouring of lead and by the unsafe disposal of solid and liquid waste.

Lead smelting

In lead smelting lead is extracted from lead ore using heat and melting processes. During the smelting process, dust particles containing arsenic, antimony, cadmium, copper, mercury and lead may be emitted. These particles settle in the soil with slag and contaminate the surface and groundwater. Improperly disposed waste water also impacts the drinking water and agriculture.

Mining and ore processing

Mining and ore processing are the principal industrial sectors that provide the lion's share of minerals, metals and precious stones required for the production of a wide range of products and materials. Toxic waste at active sites and in abandoned mines is the primary source of the explosion of environmental toxins due to mining and ore processing. These waste products consist of waste water, mining waste and harmful chemicals such as solvents, chlorides, sulphur compounds, hydrochloric or sulfuric acid, soda and cyanide compounds.

Tannery operations

Leather tanning substantially utilises the reaction of collagen fibres in rawhide to tannins, chromium, aluminium or other active chemical ingredients. Chromate salts are frequently used in the stabilisation process. This may release large quantities of uncontrolled, hazardous chromium waste and chromium-containing waste water into the environment. Trivalent chromium is used in the re-tanning process and when it is washed off the leather during the production process it enters the waste water. Under anthropogenic activity, trivalent chromium may oxidise into more harmful hexavalent chromium. Hexavalent chromium is a carcinogen and may cause lung or stomach cancer.

Industrial and municipal disposal sites

In the process of economic and urban growth, solid waste from industry, manufacturing, hospitals, etc. has generated enormous quantities of waste in many LMICs. Insufficient industrial and urban waste management has resulted in uncontrolled waste disposal sites. The main source of pollutants in disposal sites are contaminated liquids seeping into the groundwater, dust from poorly covered landfills and landfill gas that is not captured. Seepage water may comprise heavy metals, volatile organic compounds (VOC) and pathogens.

Industrial estates

Industrial estates are often located outside of densely populated areas, but their waste water can still impact the environment and the health of the nearby population. The common exposure pathways for contaminants at polluted sites also include direct contact with improperly disposed waste as well as sludge and dust emissions.

Artisanal gold mining

Artisanal gold mining refers to a small-scale informal mining activity to recover gold by the mining and processing of ores. This type of mining represents 20 percent of the worldwide gold production, but it

releases more mercury into the environment than any other sector in the world. The technologies and methods are very simple and the ore is processed in rudimentary structures. Artisanal gold mining often takes place in residential areas with children and families close by. They inhale the mercury vapours, which are also deposited on plants, in the soil and in the water.

Product manufacturing

With the increase in the demand for consumer goods, product manufacturing represents a large share of the world's gross national product. Especially improperly deposited, untreated, lead-containing waste water from production plants is disposed indiscriminately in the local waterways. Other emissions are generated by the incineration of solid wastes. The chromium contamination at such sites occurs through air emissions and the groundwater.

Chemical manufacturing

Chemical and pharmaceutical manufacturing produces basic chemicals, synthetic materials and other chemicals. A common characteristic of nearly the entire chemical industry is the use of volatile organic compounds (VOC) as a solvent and raw material. VOCs are low-molecular compounds of carbon and hydrogen, often additionally containing oxygen, nitrogen, chlorine and other elements. VOCs easily convert to vapour because of their low molecular weight. Well-known compounds in every-day life include ethyl alcohol, propane and chemicals in gasoline, kerosene and oil. There are thousands of toxic VOCs and some are causing eye, nose and throat irritations and headaches, while others are known carcinogens. Toxic VOCs include benzene, formaldehyde, toluene, vinyl chloride and chloroform.

Dye industry

Chemical dyes are primarily used in the production of consumer goods and are frequently found in textiles, printing inks, paper and plastic. In the textile industry alone there are more than 3600 different types of dyes. Each of these is subject to a special production process, but sulfuric acid, chromium, copper and other metals are always used. Many additional additives, solvents and chemicals are used during the production of dyes.

About Pure Earth and Green Cross Switzerland

The goal of the Environmental Toxin Report 2016 is to provide information about the most important effects of industrial sources of environmental toxins on public health and to show opportunities to implement life-saving decontamination and protective measures. For this purpose, Pure Earth and Green Cross Switzerland are presenting cost-effective and innovative solutions to effectively protect the health of the endangered population.

Pure Earth (formerly Blacksmith Institute) is an internationally operating non-profit organisation committed to solving life-threatening environmental problems in developing nations. Pure Earth is involved in identifying and cleaning up the most polluted places in the world and focuses on places where the health, especially of women and children, is most at risk. The New York-based organisation works jointly with governments, the international community, NGOs and local agencies on the development and implementation of innovative, cost-effective solutions to save lives. Since 1999 Pure Earth has realised over 50 projects and is currently involved in more than 40 projects in 20 countries.

With its programs Social and Medical Care and Legacy of the Cold War, Green Cross Switzerland is committed to overcoming the subsequent damages of industrial and military disasters. The program Water-Life-Peace supports the access to clean water. The primary goal is to improve the quality of life of the people impacted by chemical, radioactive and other types of contamination, as well as the promotion of sustainable development in the spirit of cooperation instead of confrontation.

Green Cross International (GCI), founded by Mikhail Gorbachev, is an independent, non-profit non-government organisation acting through advocacy at the highest level and through local projects to surmount interrelated global challenges, such as security, the fight against poverty and the destruction of the environment. GCI, headquartered in Geneva, maintains a growing network of national organisations in over 30 countries.

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