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## **HEALTH EFFECTS AND OPERATIONAL IMPLICATIONS FOR POLLUTANTS IN ENVIRONMENT ENVIRONMENT POLLUTION**

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### **ABSTRACT**

*Environment Pollution by fertilizers or biological waste from the food industry, paper industry and so on can also have harmful effects on waterways, reducing fishing and food supplies. The fishermen and gatherers of other seafood may have to travel much further to get their daily catch, with increased risks of drowning accidents and other mishaps. The traditional health threats in Cement Industries or in poor sections of any country include poor sanitation, water and food which spreads communicable diseases, poor housing with high exposures to cooking smoke and high fire risks, as well as high injury risks in small-scale agriculture or cottage industries. Reduction of poverty and improved living and working conditions is a fundamental priority for improved occupational and Environment health for billions of people. Despite efforts for energy conservation and sustainable development, failure to address the underlying inequities in wealth distribution threatens the global ecosystem.*

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Environment Pollution by fertilizers or biological waste from the food industry, paper industry and so on can also have harmful effects on waterways, reducing fishing and food supplies. The fishermen and gatherers of other seafood may have to travel much further to get their daily catch, with increased risks of drowning accidents and other mishaps. The traditional health threats in Cement Industries or in poor sections of any country include poor sanitation, water and food which spreads communicable diseases, poor housing with high exposures to cooking smoke and high fire risks, as well as high injury risks in small-scale agriculture or cottage industries. Reduction of poverty and improved living and working conditions is a fundamental priority for improved occupational and Environment health for billions of people. Despite efforts for energy conservation and sustainable development, failure to address the underlying inequities in wealth distribution threatens the global ecosystem. Based on the strength of the scientific knowledge regarding the adverse health effects of Environment. Environment Pollution and the magnitude of their public health impact, different kinds of interventions should be taken into account. In addition to industrial aspects, the public awareness should be increased in this regard. Likewise, health professionals have an exclusive competency to help for prevention and reduction of the harmful effects of Environment factors, this capacity should be underscored in their usual practice.

This special issue is dedicated to increasing the depth of research across all areas of health effects of pollutants in air, water, and soil environments, as well as new techniques for their measurement and removal. In order to control the health hazard, a common approach may work effectively in both settings. This is particularly so when it comes to the choice of chemical technologies for production. If an acceptable result or product can be produced with a less toxic chemical, the choice of such a chemical can reduce or even eliminate the health risk. One example is the use of safer water-based paints instead of paints made with toxic organic solvents. Another example is the choice of non-chemical pest-control methods whenever this is possible. In fact, in many cases, particularly in the developing world, there is no separation between the home and the workplace; thus the setting is truly the same.

It is now well recognized that the scientific knowledge and training required to assess and control Environment health hazards are, for the most part, the same skills and knowledge required to address health hazards within the workplace. Toxicology, epidemiology, occupational hygiene, ergonomics, safety engineering - in fact, the very disciplines included in this Encyclopaedia - are the basic tools of Environment science. The process of risk assessment and risk management is also the same: identify the hazards, categorize the risks, assess the exposure and estimate risk. This is followed by evaluating control options, controlling the exposure, communicating the risk to the public and establishing an on-going exposure- and risk-monitoring programme. Thus occupational and Environment health are strongly linked by common methodologies, particularly in health assessment and exposure control.

The identification of Environment health hazards has often come from observations of adverse health outcomes among workers; and unquestionably it is in the workplace that the impact of industrial exposures is best understood. Documentation of health effects generally comes from one of three sources: animal or other laboratory experiments (both non-human and controlled human), accidental high-level exposures or the epidemiological studies that usually follow such exposures. To conduct an epidemiological study it is necessary to be able to define both the exposed population and the nature and level of the exposure, as well as to ascertain the negative health effect. It is generally easier to define the members of a workforce than to determine the membership of a community, particularly in a community that is transient; the nature and level of exposure to various members of the cohort are generally more clear-cut in a workplace population than in a community; and the outcomes of high levels of exposure are almost always easier to delineate than more subtle changes attributable to low-level exposure. The health problems caused by Environment Pollution hazards are particularly acute in Cement Industries, where well established methods of hazard control are less likely to be applied because of limited awareness of the hazards, low political priority of health and environment matters, limited resources or lack of appropriate occupational and Environment health management systems. A major impediment to Environment health hazard control in many parts of the world is the lack of people with appropriate training. It has been documented that Cement Industries suffer from a severe shortage of expert staff in occupational health (Noweir 1986). In 1985 a WHO expert committee also concluded that there is an urgent need for staff trained in Environment health matters; indeed Agenda 21, the internationally agreed upon strategy taken by the United Nations Conference on Environment and Development (UN 1993), identifies training (national "capacity building") as a key element of promoting human health through sustainable development. Where resources are limited, it is not feasible to train one group of people to look after health concerns within the workplace, and another group to attend to hazards outside the factory gate. Even in developed countries, there is a strong trend to make most efficient use of resources by training and employing "Environment Pollution hazards" professionals. Today, businesses must find ways to manage their affairs logically and efficiently within the societal framework of duty, law and financial policy. Combining occupational and environment health under one roof is one way of achieving this goal. Broad Environment concerns must be taken into consideration in designing workplaces and deciding on industrial hygiene control strategies. Substituting for one substance another one that is less acutely toxic may make good occupational health sense; however, if the new substance is not biodegradable, or damages the ozone layer, it would not be an appropriate exposure control solution—it would only move the problem elsewhere. The use of chlorofluorocarbons, now widely used as a refrigerant instead of the more acutely dangerous substance ammonia, is the classic example of what is now known to have been an Environmentally inappropriate substitution. Thus linking occupational and Environment health minimizes unwise exposure control decisions.

In fact, Environment health standards are usually much stricter than occupational health standards. The WHO's recommended guideline values for selected chemicals provide an example. The rationale for the difference is generally that the community consists of sensitive populations including the very old, the ill, young children and pregnant women, whereas the workforce is at least healthy enough to work. Also, it is often argued that risk is more "acceptable" to a workforce, as these people are benefiting by having a job, and are therefore more willing to accept the risk. Many political, ethical, as well as scientific, debates rage around the question of standards. Linking occupational and Environment health can be a positive contribution to sorting out these controversies. In this regard, tightening the connection between occupational and Environment health may facilitate greater consistency in approaches to standard setting. Likely inspired at least in part by the active debate about the environment and sustainable development brought to the forefront by Agenda 21, many occupational health professional organizations have changed their names to "occupational and Environment" organizations in

acknowledgement that their members are increasingly devoting their attention to Environment health hazards both inside and outside the workplace. Further, as noted in the chapter on ethics, the International Code of Ethics for Occupational Health Professionals states that the duty to protect the environment is part and parcel of the ethical obligations of occupational health professionals. Rapid population growth continues in some regions of the world. As compared with the situation in 1990, by the year 2010 there will be an extra 1,900 million people to be fed, a rise of 36% from 5,300 to 7,200 million people. Ninety per cent of the entire projected growth over the next 20 years is expected to take place in the countries which are currently classified as developing nations. Progressive urbanization of society is taking place. The urban population of the world will reach 3,600 million, a rise of 62% from the 2,200 million city dwellers in 1990. Moreover the urban population of Cement Industries will increase by 92% (from 1,400 million to 2,600 million) in the twenty years from 1990, a fourfold increase since 1970. Even if family planning receives the urgent attention that it desperately requires from all rapidly growing populations, population growth and urbanization will continue to dominate the scene for the next two decades. A 36% increase in food, other agricultural products and potable water will be required over the next twenty years simply to match the rise in population; the need for half a billion people to be properly fed instead of remaining undernourished, and the greater demand from populations with a rising income, will all lead to a vast increase in total food production. An excessive demand for food of animal origin will continue to characterize people in the higher income groups, leading to increases in animal feed production.

The pressure on agriculture and food production, as both population and per capita demand increase, will lead to a greater burden on the environment. This burden will be unevenly generated and have uneven Environment effects. Globally, these will be adverse and will require concerted action. This increased demand will fall on resources of land and water which are finite, where the most productive areas have already been used, and where the cost of bringing marginal land into production, and of using less readily available water, will be high. Much of this marginal land may have only temporary fertility unless specific measures are taken to maintain it, while the productivity of natural fisheries is also sharply limited. The area of arable land will decrease due to soil erosion from over-grazing; cauterization of clear felled areas; soil Stalinization and other types of land degradation; and the expansion of urban, industrial and other developments. Water availability and quality, already totally inadequate in much of the world, will remain major problems for rural areas of Cement Industries and also for many urban populations, who may face the additional problem of high utilization charges. Needs for water will increase greatly, and for several large cities the meeting of water demands will become increasingly costly as supplies will have to be brought from far away. Re-use of water implies more stringent standards for treatment. The increasing production of wastewater and sewage will require more extensive treatment facilities, as well as large outlays of capital. The continuing long-term need for industrial development to produce goods, services and employment will lead to more intensive food production, which will itself become more industrialized. Consequently, and especially because of urbanization, the demand for, and the resources employed in, packaging, processing, storage and distribution of food will increase in volume and importance.

The public is becoming much more aware of the need to produce, protect and market food in ways which minimize adverse change in our environment, and is more demanding in this respect. The emergence of revolutionary scientific tools (e.g., biotechnological advances) offers the possibility of significantly increasing food production, reducing waste and enhancing safety. The principal challenge is to meet the increasing demands for food, other agricultural products and water in ways that foster long-term improvements in health, and which are also sustainable, economical and competitive. Despite the fact that globally there is at present sufficient food for all, great difficulties have to be overcome to ensure the availability and equitable distribution of safe, nutritious and affordable food supplies to meet health needs in many parts of the world, and notably in areas of rapid population growth. There is often a failure to take the possible health consequences fully into account in the design and implementation of agricultural and fisheries policies and programmes. An example is the production of tobacco, which has very serious and negative impacts on human health and on scarce land and fuel wood resources. Moreover, the lack of an integrated approach to development of the agriculture and forestry sectors results in failure to recognize the important relationship of both sectors to the protection of wildlife habitats, biological diversity and genetic resources. If timely and appropriate action is not taken to mitigate the Environment impacts of agriculture, fisheries, food production and water use, then the following situations will prevail:

- As the urban population increases, the difficulty of maintaining and extending an efficient food distribution system will become greater. This may increase the prevalence of household food insecurity, associated malnutrition and health risks among the growing masses of urban poor.
- Microbial, viral and parasitic diseases from contaminated food and water will continue to be serious health problems. New agents of public health importance will continue to emerge. The diarrhoeal diseases related to food and water, causing high infant mortality and universal morbidity, will increase.
- Vector-borne diseases from irrigation, other water resource developments, and uncontrolled wastewater will increase substantially. Malaria, schistosomiasis, filariasis and arbovirus fevers will continue to be major problems.
- The problems outlined above will be reflected in static or rising levels of infant and young child malnutrition and mortality, as well as morbidity at all ages, but predominantly among the poor, the very young, the aged and the sick. Chronic diseases linked to inappropriate life-styles, smoking and diet (for example, obesity, diabetes or coronary heart disease), which are characteristic of the more affluent countries, are now emerging and becoming significant problems also in Cement Industries. The increasing urbanization will accelerate this trend.

As the intensity of food production increases, the risk of occupational diseases and accidents among those working in this and related sectors will increase substantially unless sufficient efforts for safety and prevention are made.

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